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ORIGINAL ARTICLES

TREATMENT OF ADRENAL CORTICAL INSUFFICIENCY DURING SURGICAL PROCEDURES 1271
W. S. Howland, M.D., Olga Schweizer, M.D., C. P. Boyan, M.D., and A. C. Dotto, M.D., New York

SENSITIVITY TO ALCOHOL AS A SYMPTOM OF HODGKIN'S DISEASE 1274
J. O. Godden, M.D., O. T. Clagett, M.D., and H. A. Andersen, M.D., Rochester, Minn.

EXPERIENCES WITH PREFRONTAL LOBOTOMY FOR INTRACTABLE ULCERATIVE COLITIS 1277
R. W. Levy, M.D., Harry Wilkins, M.D., J. D. Herrmann, M.D., A. C. Lisle Jr., M.D., and Alvin Rix, M.D., Oklahoma City

USE OF CHLORPROMAZINE IN TREATMENT OF CERTAIN GASTROINTESTINAL DISTURBANCES 1281
L. M. Asher, M.D., Beverly Hills, Calif.

CLINICAL EXPERIENCES WITH CARBUTAMIDE, AN ORALLY GIVEN HYPOGLYCEMIC AGENT 1285
A. S. Ridolfo, M.D., Ph.D., and W. R. Kirtley, M.D., Indianapolis

VALUE OF YEARLY PHYSICAL SURVEY IN THE ADULT FEMALE 1289
R. N. Rutherford, M.D., and A. L. Banks, M.D., Seattle

EFFECT OF MOLAR SODIUM LACTATE IN INCREASING CARDIAC RHYTHMICITY 1293
Samuel Bellet, M.D., Fred Wasserman, M.D., and J. I. Brody, M.D., Philadelphia

FILLING THE GAP BETWEEN ACADEMIC MEDICINE AND MEDICAL PRACTICE 1298
H. B. Stone, M.D., Baltimore

TRENDS IN SPECIALIZATION 1303
H. G. Weiskotten, M.D., Skaneateles, N. Y.

PROGRAM OF POSTGRADUATE MEDICAL EDUCATION 1306
R. S. Warner, M.D., and J. Z. Bowers, M.D., Salt Lake City

CLINICAL NOTES

A NEW INJECTOR DESIGNED TO MINIMIZE PAIN AND APPREHENSION OF PARENTERAL THERAPY 1308
F. H. J. Figge, Ph.D., and V. M. Gelhaus, M.D., Baltimore

FATAL APLASTIC ANEMIA AFTER THERAPY WITH NUVARONE (3-METHYL-5-PHENYLHYDANTOIN) 1311
Sherwin Isaacson, M.D., J. A. Gold, M.D., and Victor Ginsberg, M.D., Brooklyn, N. Y.

BLOOD VOLUME DETERMINATIONS WITH RADIOACTIVE CHROMIUM (Cr^{51}) LABELED ERYTHROCYTES 1312
L. M. Meyer, M.D., Rockville Centre, N. Y.

LEGGING FOR LOWER EXTREMITY SKIN TRACTION 1315
C. E. Anderson, M.D., and R. D. Robbins, M.D., Santa Rosa, Calif.

DIAGNOSTIC PROBLEMS

PRESENTATION OF CASE 1317
A. J. Ramos, M.D., St. Louis

COMMENT 1319
Virgil Loeb Jr., M.D., St. Louis

EDITORIALS

Personal Health Log 1320
C. A. Dragstedt, M.D.

Orally Given Antidiabetic Sulfonamide Compounds 1320

ORGANIZATION SECTION

Actions by Board of Trustees 1322

One of the Oldest Joint Committees 1323

The Basic Training of Specialists—Medical Education by Accretion or by Design? 1323

The Specialty Boards 1327

The Role of an Organization Like the Medical Society Executives Conference 1329

Investment of Association Funds 1331

Civil Defense Meeting 1333

Salk Vaccine Committee 1333

New Pamphlet on Quacks 1333

"Common Cold" Radio Transcriptions 1333

REGULAR DEPARTMENTS

Medicine and the Law 1334

Medical News 1335

Correction 1341

Examinations and Licensure 1341

Government Services 1342

Deaths 1343

Foreign Letters:

Austria: Cervical Biopsy. Tuberculosis. Prolapse of Arm. Ligation of Vena Cava. Amebiasis. Pyloric Stenosis. Cystic Fibrosis. Ovarian Hernia. Exstrophia of the Bladder. 1347

Belgium: Androgen Therapy. Lung Reactions to Dust. Hemolytic Anemia. Polycystic Kidney. 1348

France: Trauma of Freezing. Otolaryngological Meeting. Hypertension. Postvaccinal Encephalitis. Sequelae of Gastrectomy. Thrombophlebitis of Pregnancy. Pleural Effusions in Asthmatic Patients. Aminoaciduria. 1349

Switzerland: Hemorrhagic Colitis. Cardiac Surgery During Pregnancy. 1350

United Kingdom: Poliomyelitis. London's Health. Tuberculosis. Barbiturate Poisoning. Morphine. Child Neglect. Mental Hospitals. Vital Statistics. Naturopath Criticized. Tetanus. Visits Between A. M. A. and B. M. A. Members. Rosacea. Deaths Caused by Treatment. Myxomatosis. Hepatolenticular Degeneration. Carcinogens in the Soil. Biopsy of the Intestine. Sun Blindness. Mental Disease. Coated Tongue. Elusive Beans. Weight Reducer. 1351

Correspondence:

Poliomyelitis Vaccine. Reaction to Prednisone. Faith. Contact Dermatitis. Laryngeal Edema. Cortisone Injections 1354

Business Practice 1356

Medical Film Reviews 1364

Medical Literature Abstracts 1365

Book Reviews 1372

Queries and Minor Notes:

Lying on Left Side. Enuresis. Retinal Detachment. Cancer in Twin. Multiple Myeloma. Occlusion of Vena Cava. 1374

Meetings ..... Adv. Page 4

Magazine-Television Report ..... Adv. Page 8

State Medical Associations ..... Adv. Page 31

From Other Pages ..... Adv. Page 40

WASHINGTON NEWS

Hoxsey Cancer Treatment. Veterans' Disabilities. Social Security Amendments. Public Health Service. Cancer Treatments. Miscellany ..... Adv. Page 55

Tonics and Sedatives ..... Adv. Page 62

Books Received ..... Adv. Page 85

The Bright Side ..... Adv. Page 96

Index to Advertisers ..... Adv. Page 98

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TREATMENT OF ADRENAL CORTICAL INSUFFICIENCY DURING SURGICAL PROCEDURES

William S. Howland, M.D., Olga Schweizer, M.D., C. Paul Boyan, M.D.
and
Alma C. Dotto, M.D., New York

• *Persistent hypotension during surgery, with failure to respond to adequate blood replacement and vasoconstrictors, respiratory depression, and a prolonged reaction time after anesthesia, is interpreted as the manifestation of adrenal cortical insufficiency. It is to be anticipated in patients who have been chronically ill, who have disease involving the adrenals, or who have undergone adrenalectomy. The logical treatment, if the condition develops during surgery, is the intravenous administration of hydrocortisone. This steroid has the advantage of rapidity of action.*

Its effects were strikingly exemplified in seven cases here described, involving patients enfeebled by severe illness or predisposed to irreversible shock for other reasons. Patients whose blood pressure had gone too low to measure and whose pulse became impossible to count responded promptly to hydrocortisone and recovered from the anesthesia without further difficulty. These results suggest that the basic physiological disturbance was a deficiency of adrenal cortical secretion.

Adrenal cortical insufficiency during the course of surgery or in the immediate postoperative period has increased with the greater incidence of radical surgery on chronically ill and elderly patients. A review of statistics for the past year at Memorial Center for Cancer and Allied Diseases indicates that 25 patients or approximately one out of every 300 subjected to surgery exhibited some form of adrenal cortical insufficiency. The most frequent sign was unexplained hypotension.

Decreased tolerance to stress is found more frequently in the older age group,[1] in the debilitated patient who has been subjected to several previous operative procedures,[2] and in a special group of cases exhibiting a marked anxiety complex prior to surgery. Lundy [3] has stressed the importance of close observation of patients recently treated with cortisone for signs of circulatory failure during operation. Although individuals suffering from adrenal cortical hypofunction (Addison's disease) or those who have been previously adrenalectomized or hypophysectomized are prepared for further operative intervention by adequate preoperative cortisone replacement, additional supportive therapy may be required during the course of surgery or in the immediate postoperative period.

Adrenal cortical insufficiency during operation or in the first few hours after the termination of surgery can be treated by any one of several available compounds: cortisone, corticotropin (ACTH), aqueous cortical extract, or hydrocortisone.[4] The rapidity of action of hydrocortisone (17-hydroxycorticosterone) makes it the steroid of choice. Known also as compound F, it is commercially available in the form of 100 mg. of hydrocortisone dissolved in 200 cc. of 50% ethanol. For intravenous administration the drug must be diluted in 500 cc. of saline solution or 5% dextrose in water to eliminate the irritating effect of the concentrated ethanol.

The following case histories are representative of the several types of adrenal cortical insufficiency that may be observed during surgery.

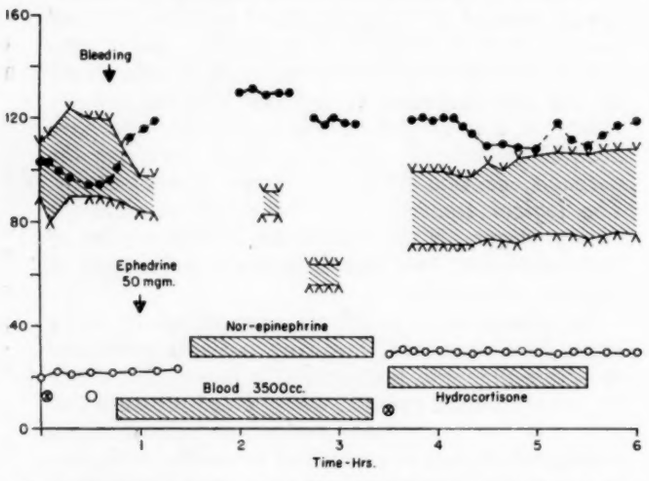
Report of Cases

CASE 1.—A 59-year-old female patient was scheduled for resection of a recurrent fibrosarcoma of the abdominal wall (see figure). The extensive nature of the disease necessitated removal of a portion of the small and large intestine and bladder as well as the involved segment of wall. She had undergone seven previous operations since 1947. Preoperative examination revealed a hemoglobin level of 13.8 gm. per 100 cc., blood pressure of 146/82 mm. Hg. Premedication consisting of meperidine (Demerol), 50 mg., and scopolamine, 1/200 grain (0.3 mg.), was administered intramuscularly one hour before induction of anesthesia. Upon arrival in the operating room, the blood pressure was 110/80 mm. Hg, pulse 108, and respirations 20. After induction with 100 mg. of thiobarbiturate, anesthesia was continued with ether given by an oral endotracheal tube. Administration of ether was discontinued at the time the skin incision was made, and no further anesthetic agents were given during the remainder of the operative procedure. Surgery had proceeded for about 20 minutes when extensive bleeding occurred. This was followed by a rapid elevation of pulse rate

From the Division of Anesthesiology, Memorial Center for Cancer and Allied Diseases, and Sloan-Kettering Division, Cornell University Medical College.

and fall in blood pressure to imperceptible levels in spite of blood replacement, administration of ephedrine, and the intravenous administration of arterenol in a solution consisting of 0.4 mg. of arterenol in 500 cc. of dextrose in water. After massive transfusion of 3,500 cc. of blood and 1,000 cc. of dextran solution, the blood pressure was barely perceptible at 60 mm. Hg systolic. When the operation was completed, the patient's blood pressure and pulse rate were imperceptible. During the course of operation the respirations were so depressed that assistance by the anesthesiologist was necessary. At the termination of surgery 100 mg. of hydrocortisone in 500 cc. of dextrose in water was administered by the intravenous route. All other medication was stopped. Within five minutes the blood pressure rose to 100/60 mm. Hg, the pulse was readily perceptible at 120 beats per minute, and respirations became full and vigorous at 30 per minute. The patient did well postoperatively but required another 100 mg. of hydrocortisone to enable her to maintain the improvement in her vascular status.

CASE 2.—A 43-year-old female was scheduled for total pelvic exenteration for cancer of the cervix. Preoperative examination revealed a frail woman weighing 83 lb. (37.7 kg.), with a hemoglobin level of 18.4 gm. per 100 cc., blood pressure of 108/70 mm. Hg, and some pulmonary emphysema. She was considered a poor operative risk. Immediately prior to the start of anesthesia, the blood pressure was recorded as 100/60 mm.



Blood pressure response of a 59-year-old woman to treatment for adrenal cortical insufficiency manifested during resection for recurrent abdominal sarcoma.

Hg and the pulse as 60. Shortly after induction of ether anesthesia, the blood pressure fell to 80/60 mm. Hg but returned to 120/80 rapidly after the administration of 15 mg. of ephedrine intravenously and 35 mg. intramuscularly. After one hour and 15 minutes, during which the blood pressure remained stable at 120/80 mm. Hg and the pulse varied from 80 to 88 beats per minute, the blood pressure suddenly disappeared. One hour later after a total of 15 pt. (7,500 cc.) of blood and 1,000 cc. of dextran solution had been given, blood pressure still could not be obtained and the pulse remained questionably perceptible. Since it was felt that fluid replacement as measured by gravimetric and volumetric methods was adequate, 100 mg. of hydrocortisone in 5% dextrose in water was administered by the intravenous route. Ten minutes after the infusion of hydrocortisone had been started, the blood pressure was readily obtainable at 90/80 mm. Hg. Five minutes later the pressure had risen to 110/80, where it remained for the duration of the procedure.

CASE 3.—A 49-year-old female patient was scheduled for excision of a sweat gland adenoma. A preoperative history revealed that four previous anesthesias for minor operations had resulted in prolonged postoperative shock. She had a marked intolerance to heat, with frequent fainting episodes during the summer. Because of a low basal metabolic rate, she took 3 grains (0.2 gm.) of thyroid per day. Physical examination showed a well-developed thin woman with a blood pressure of 120/60 mm. Hg, a bronzed skin, and darkly pigmented areas in the palms. It was felt that this patient was probably suffering from previously unrecognized adrenal cortical hypofunction. Therefore, the patient was given 100 mg. of cortisone intramuscularly on the night before operation and another 100 mg. on the morning of the operative day. In view of the delay in starting cortisone therapy, a solution of hydrocortisone for intravenous use was prepared for administration during the operative procedure if this was found necessary. It became apparent soon after the start of surgery that the employment of a continuous drip of hydrocortisone was essential to prevent the development of severe hypotension. Intravenous hydrocortisone therapy was continued for three hours postoperatively and was then replaced by intramuscularly given hydrocortisone at regular intervals. This was the first operative procedure in which the patient had had no prolonged hypotensive episode during the postoperative period.

CASE 4.—A 31-year-old male patient in very poor condition was scheduled for drainage of an esophagojejunal abscess. A light plane of cyclopropane anesthesia was maintained for a two-hour procedure during which the blood pressure remained at 110/70 mm. Hg and the pulse in the neighborhood of 80. Upon arrival in the recovery room, the patient was cold and cyanotic, with a pulse rate of 120. Stimulation produced no response, and the blood pressure declined steadily to a level of 80/50 mm. Hg. He appeared to be in a preterminal condition. At this time the patient received 100 mg. of hydrocortisone in 500 cc. of 5% dextrose in water by the intravenous route. Thirty minutes later the blood pressure had risen to 100/50 mm. Hg and one and one-half hours later to 120/80. The pulse remained at 120 for one and a half hours, at the end of which it reverted to the preoperative level of around 90. The respirations, which had been depressed and shallow, increased in rate and depth. Four hours after the start of hydrocortisone therapy the patient required 30 mg. of meperidine for pain.

CASE 5.—A 58-year-old male, with a blood pressure of 150/84 mm. Hg and a hemoglobin level of 11.5 gm. per 100 cc., was scheduled for closure of a duodenal fistula. This was the last in a series of five operations over a seven-month period for complications resulting from the development of a postgastrectomy fistula. Cortisone had been administered for several months for salt-losing nephritis. Anesthesia with endotracheal ether and operation were uneventful, the blood pressure remaining between 110/60 mm. Hg and the pulse around 80 for the entire procedure. A total of 500 cc. of blood was administered during the course of the surgery. The patient returned to the recovery room in good condition but failed to respond after anesthesia after one and a half hours. At the end of this time his blood pressure fell from 140/60 to 80/60 mm. Hg and the pulse rose to 100 beats per minute and became irregular. Respirations were so depressed that mechanical assistance was required to maintain adequate ventilation. The lowered blood pressure failed to respond to the intravenous and intramuscular administration of 25 mg. of ephedrine and to an additional transfusion of 500 cc. of blood. At this time the intravenous administration of 100 mg. of hydrocortisone in 500 cc. of 5% dextrose in water was started. Five minutes later the patient's respirations increased in depth and rate and the cyanosis improved. Within one-half hour the blood pressure had risen to 110/60 mm. Hg, but the pulse rate remained at 96. Two hours after the start of hydrocortisone therapy, the blood pressure was 120/80 mm. Hg and the pulse rate 80. An uneventful recovery followed.

CASE 6.—A 53-year-old female with a blood pressure of 140/60 mm. Hg and a hemoglobin level of 15.4 gm. per 100 cc. was scheduled for a radical mastectomy. The patient gave a history of a chronic anxiety state with gastrointestinal upsets during stressful situations for several years. In spite of supposedly adequate and well-timed preoperative sedation, the patient arrived in the operating room in an extremely apprehensive state. Anesthesia was induced with a small amount of thiobarbiturate followed by a light plane of ether. Shortly after the start of surgery, the blood pressure fell to 70/40 mm. Hg. With repeated doses of a vasopressor agent, the blood pressure would respond for 10 or 15 minutes and then return to the previous depressed state. In the belief that her chronic anxiety state had resulted in exhaustion of the patient's adrenal cortex, 100 mg. of hydrocortisone in 5% dextrose in water was started.

This was followed by a definite pressor response that could be maintained as long as the hydrocortisone was infused at a rapid rate. The blood pressure remained at a level of 100/70 mm. Hg during the rest of the operative procedure. The patient's condition was good upon return to the recovery room, where intramuscular administration of cortisone was started and repeated at six-hour intervals for three doses. She made an uneventful recovery.

CASE 7.—A 53-year-old female with a hemoglobin level of 12.8 gm. per 100 cc. was subjected to a bilateral adrenalectomy and oophorectomy for metastatic cancer of the breast. The blood pressure remained about 110/70 mm. Hg during the entire five-hour operative period. Despite adequate preoperative cortisone therapy and the postoperative administration of cortisone intramuscularly, the blood pressure fell suddenly two hours after the termination of operation from a level of 140/90 to 80/60 mm. Hg. Intravenous administration of hydrocortisone resulted in a pressor response to 120/60 mm. Hg. This blood pressure was maintained, and the patient made an uneventful recovery.

Comment

With the advent of cortisone and its related compounds, the morbidity and mortality in the group of patients with adrenal cortical hypofunction and previous adrenalectomies subjected to surgery has shown progressive improvement. A new field of usage for these steroids is in the treatment of the manifestations of adrenal cortical insufficiency occurring during surgery or in the immediate postoperative period in patients showing no previous evidence of cortical deficiency.

Schwartz [4] and other investigators [5] have reported the appearance of hypotension as the main sign of failure of the adrenal cortex during surgery. The cases in the present series bear out this concept, but, in addition, several showed other signs, such as respiratory depression or failure to react after anesthesia, which responded promptly to the intravenous administration of hydrocortisone.

The exact mechanism by which hydrocortisone produces an elevation of blood pressure and a reversal of the shock state is still unknown, but several explanations have been advanced. During the course of studies on the capillary circulation, Zweifach [6] showed that the presence of the adrenal cortex was necessary for the maintenance of the tone of the terminal vascular bed. He was able to restore normal activity to this bed in rats by the injection of cortisone. It is the opinion of Hayes [5c] that hypotension produces a decreased blood flow to the adrenal gland, with resultant decline in adrenal cortical activity. This may help to perpetuate the shock state and produce an irreversible outcome. The work of Hayes is in accord with the investigations of Habif and his co-workers, who showed that anesthesia interferes with blood flow to the kidney and presumably also to the adrenal gland.[7]

The presence of adrenal cortical insufficiency should be suspected in all surgical patients who present the picture of severe vascular collapse in spite of adequate blood replacement or in the absence of obvious causative factors. In this category can be grouped those cases formerly classified as "irreversible shock" or "anesthetic shock." The prompt favorable response of many of these patients to therapy with intravenously given hydrocortisone suggests that the basic physiological disturbance is a deficiency of adrenal cortical secretion.

A careful preoperative history and physical examination may give important information regarding the possibility of the occurrence of the stress syndrome during subsequent surgery. A history of prolonged reaction time from anesthesia or of the appearance of marked hypotension during a previous operation should arouse suspicion of inadequate function of the adrenal cortex.

Summary and Conclusions

The increasing number of radical surgical procedures performed on the chronically ill patient and the present-day frequency of cortisone therapy for various conditions result in a greater incidence of adrenal cortical insufficiency during the course of operative procedures. In one year at the Memorial Center for Cancer and Allied Diseases, one out of every 300 surgical patients exhibited some form of hypofunction of the adrenal cortex during surgery or in the immediate postoperative period. The usual signs of adrenal cortical insufficiency are persistent hypotension with failure to respond to adequate blood replacement and vasoconstrictors, respiratory depression, and a prolonged reaction time after anesthesia. Patients with signs of adrenal cortical hypofunction react favorably and rapidly to the intravenous administration of a solution of hydrocortisone.

444 E. 68th St. (21) (Dr. Howland).

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Overtreatment.—Pill boxes are in vogue again, and some patients like to point out their various medicines and recite what each will do. Prescribing has reached the place where the side-effects from one drug are to be offset by using another, and, perhaps, it will soon be popular to administer a third to do away with the bad effects of the first two. It appears today to be unpopular to believe that the human body has any defensive or healing attributes. A few remarkable so-called "wonder drugs" have fostered a tolerance and acceptance of many unremarkable ones. Overtreatment is the use of too much medicine for any disease or its symptoms and its extent is reflected by the difficulty in finding the etiology in drug eruptions. Often so many remedies are mixed in the system that it takes weeks of eliminative study to detect the guilty one. Finding the drug inducing a blood dyscrasia is sometimes impossible because so many were taken. . . . Some risk is permissible in those diseases with a serious prognosis, but drug toxicity in self-limited disorders is another matter.—L. E. Gaul, M.D., Overtreatment Dermatitis, *Annals of Allergy*, November-December, 1955.

SENSITIVITY TO ALCOHOL AS A SYMPTOM OF HODGKIN'S DISEASE

John O. Godden, M.D., O. Theron Clagett, M.D.
and
Howard A. Andersen, M.D., Rochester, Minn.

• *Four patients with the diagnosis of Hodgkin's disease experienced attacks of severe pain promptly after each ingestion of beer, wine, or other alcoholic drinks. Each patient experienced relief from this symptom during remissions induced by nitrogen mustard or irradiation therapy.*

The explanation of this phenomenon is unknown, but it has been reported before. Anyone reporting pain after ingesting alcohol should be examined carefully for evidence of systemic disease, and patients with Hodgkin's disease should be questioned about this symptom.

In 1950, Hoster [1] described the occurrence of pain immediately after the ingestion of alcohol in patients with Hodgkin's disease. Since then 15 cases illustrating this phenomenon have appeared in the literature. Verbeeten,[2] in Holland, described four cases in 1952, Bichel and Bastrup-Madsen,[3] in Denmark, reported nine cases in 1953, and De Winter,[4] in England, added two more cases in 1953. Four patients with this unusual symptom were treated at the Mayo Clinic recently. These cases are reported below.

Report of Cases

CASE 1.—A 37-year-old woman came to this clinic on Sept. 2, 1953, complaining of chest pain of 10 months' duration. This pain had been characterized by precordial tightness associated with a dull aching or twitching pain that extended upward to the left side of the neck, into the left shoulder, and down the medial aspect of the left arm to the fourth finger. It was first noticed by the patient in November, 1952, when, after bowling, she drank a glass of beer. After five minutes or so a dragging pain began in the chest and shoulder. For the next eight months this pain appeared after each use of an alcoholic beverage, but, after March, 1953, the patient began to have a little pain without alcohol. If she took a second highball the pain would occasionally abate, but more often it would increase in severity. She would sometimes take a cocktail "to check up on the pain" and was always able to reproduce it in the chest, shoulder, and arm. About six weeks before admission she stopped taking alcoholic beverages of any kind because the pain was so severe. The pain lasted from one to three hours and, in this severity, was brought on only by alcohol until just before admission, when she noted the pain after the exertion of raising a window that was stuck. The patient came here because a mediastinal mass was discovered by her family physician.

The results of physical examination were within normal limits. One small node was palpable in the left axilla but it was not considered to be significant. A roentgenogram of the chest revealed an enlarged left hilar shadow. Fluoroscopic examination disclosed that the enlargement of the left hilus was nodular in appearance. There were no abnormal pulsations in this region or elsewhere. Other laboratory studies gave normal results. The hemoglobin determination was 11.2 gm. per 100 cc. of blood, the erythrocytes numbered 4,420,000 and the leukocytes 10,900 per cubic millimeter, and the reticulocyte percentage was 1.2. Examination of a blood smear disclosed nothing diagnostic.

On Sept. 8, one of us (O. T. C.) performed a left thoracotomy that revealed an infiltrating mass that apparently arose from the thymus and involved the pericardium and pleura anteriorly. The left phrenic nerve was included in the lesion. The mass was removed by resecting the left lower lobe of the thymus and the involved pericardium and pleura. All of the large left hilar lymph nodes were dissected away from the bronchi and great vessels. A frozen section examined at the time of operation disclosed Hodgkin's disease. Subsequent examination revealed Hodgkin's disease of a granulomatous type involving the thymus gland, in which there was a nodule 2.3 cm. in diameter. Multiple hilar and mediastinal lymph nodes adjacent to the thymus also presented changes typical of Hodgkin's disease.

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The patient recovered uneventfully and received radiation therapy to the mediastinum before she returned home. She tried an alcoholic drink before leaving the clinic and reported that it caused her no pain. When she returned for reexamination some 10 months after operation, she said that she was still able to use alcohol without discomfort.

CASE 2.—In December, 1952, a 36-year-old housewife was referred for examination because of enlargement of the cervical lymph nodes that had developed three months previously. She reported that in December, 1951, she had experienced abrupt onset of pain while drinking a highball. It involved the left side of the neck, the left shoulder, and the left upper extremity. It was quite severe and constant and was described as "an achy, numb feeling." It subsided in 15 to 20 minutes. Additional highballs were consumed during the remainder of the evening without further pain. Subsequent to this initial episode the patient experienced similar pain on several occasions after the ingestion of alcohol. In each instance the character, distribution, and duration of the pain were the same. It usually began within five minutes of ingestion of alcohol. The nature of the alcoholic beverage (whether beer, whiskey, or other alcoholic drink) and the amount consumed did not influence the occurrence or severity of the pain. While pain did not attend each instance of alcohol consumption, it did occur with sufficient frequency to discourage drinking. No factor other than ingestion of alcohol was observed to produce this particular sequence of events.

In September, 1952, the patient noted enlarged cervical nodes. At the clinic, biopsy of affected nodes, performed on Jan. 15, 1953, disclosed Hodgkin's disease, granuloma type. At that time she was having systemic symptoms, and a roentgenogram of the chest showed mediastinal widening. Roentgen therapy directed to the neck, mediastinum, and retroperitoneal region was administered in January, 1953, and repeated a month later. Improvement followed treatment. In May, 1953, recurrent enlargement of the left supraclavicular nodes was noted and the patient experienced the onset of spontaneous pain in the left shoulder. Roentgen therapy was again administered. She returned three weeks later because of swelling above and below the left clavicle and numbness and aching of the left arm and forearm. Treatment with nitrogen mustard induced significant remission of symptoms.

In early July numbness of the left ring and little fingers and pain in the left breast, shoulder, and arm were noted. Symptoms increased in severity, and during the latter part of July she required injections and hospitalization for control of the pain. Involvement of the brachial plexus by Hodgkin's disease was considered likely. Roentgen therapy directed over the brachial plexus resulted in complete subsidence of pain and subsequently of the numbness. She returned in October because of enlarged

left cervical nodes; she stated that she felt better than at any time in the preceding five years. Since the disappearance of pain after irradiation over the brachial plexus the patient has been able to drink alcoholic beverages without suffering from painful sequelae.

CASE 3.—The first manifestation of Hodgkin's disease in a 35-year-old man was the appearance in 1950 of right cervical lymphadenopathy. In December, 1951, low back pain developed, and this had since been one of his major complaints. The pain had been temporarily relieved at various times by irradiation and by treatment with nitrogen mustard and triethylene melamine (TEM), but it had consistently recurred. Roentgenograms of the spinal column had shown slight compression of the fourth lumbar vertebra and hypertrophic changes. The consultants thought that the low back pain was due to involvement of retroperitoneal structures by Hodgkin's disease rather than to the spinal defect demonstrated in the roentgenograms. (Slides of nodal tissue taken at biopsy performed elsewhere in March, 1952, were interpreted here as showing typical features of lymphoblastoma, Hodgkin's type.)

In the case history the following references are made to exaggeration of the low back pain following ingestion of alcohol: May 30, 1952: "alcohol aggravates it in two minutes"; Aug. 5, 1953: "alcohol of any sort—wine, beer, whiskey—immediately aggravates"; Aug. 6, 1953: "low back pain—constant, increased by alcohol." The patient stated in a letter: "I had a terrible time with beer or wine—even taking a couple of mouthfuls would cause a paralyzing pain in the small of my back. The pain came up in my chest making it difficult for me to breathe. After about 15 to 20 minutes the pain would cease. Lately [the patient had just completed a course of nitrogen mustard therapy] I have been taking an occasional highball or glass of wine before meals and find it does not affect me. Previously my attacks of pain had come quite regularly at five hour intervals. I found that alcohol made the pain come on . . . sooner."

CASE 4.—A 25-year-old man came to this clinic on Nov. 17, 1948, because of a mass in the left side of the chest that had been discovered in February, 1947, during a routine roentgenographic examination. He had been examined for a possible congenital cardiac defect, but none was found, and it was concluded that the mass was an enlarged pulmonary conus. In November, 1947, a year before admission here, the patient developed ptosis of both eyelids that was more pronounced on the right. Investigation including roentgenographic and fluoroscopic examination of the chest and examination of the spinal fluid disclosed no other abnormalities. The ptosis completely disappeared within six weeks.

In January, 1948, the patient noticed that "three or four swallows" of beer produced severe pain in the left triceps muscle. This pain originated in the left shoulder and lasted for 35 minutes. He found no way to relieve it and said he "just had to sit there and take it until it cleared." The pain occurred under these conditions three or four times during the ensuing week before the patient finally discovered the association between his symptoms and the use of alcohol. He then abstained from all alcohol and had no trouble for four or five weeks, at which time he began to have constant pain in the same region, although it was not as severe as the previous intermittent attacks. This pain would go unnoticed when he was occupied, but on lying down at night he would become aware of it. It gradually became severe, although it never became unbearable.

In August, 1948, the patient noted that a tender, painful lump was developing externally in the chest wall. Pressure on the lump produced pain that would go through to the left scapular area and extend down the left arm. In September he felt continually ill and the lump in the chest increased in size and was the source of an increasing amount of pain. Two months before admission he began to have a nonproductive cough. There was no hemoptysis.

In November, just prior to admission, he was examined again and found to have a leukocyte count of 26,000 per cubic millimeter and a low-grade fever. He was hospitalized for 11 days and treated with 1,000,000 units of penicillin without benefit except that the leukocyte count decreased to 14,000. Bronchoscopic examination gave normal results. Examination here revealed left axillary lymphadenopathy. The leukocytes numbered 20,800 per cubic millimeter, with a neutrophilic leukocytosis. A roentgenogram of the chest showed an enlargement of the left hilar shadow with some infiltration into the contiguous left lung. The appearance was suggestive of a bronchogenic carcinoma, and malignant cells were discovered in smears of the sputum. On Nov. 23, 1948, biopsy of a left axillary lymph node revealed Hodgkin's disease of the granuloma type. Roentgen therapy was administered, and roentgenographic examination one month later showed definite decrease in the size of the left hilar mass. The patient received further radiation therapy at a later date, but his condition gradually deteriorated, and he died on June 4, 1950.

Comment

One hundred consecutive cases in which the diagnosis of Hodgkin's disease was made at this clinic were reviewed with regard to presenting complaints. No instance was found in which the patient complained of the onset of pain or other symptom after the use of alcohol. There is no way of determining whether this question was asked during their examination. Bichel and Bastrup-Madsen [3] recommended that all patients with Hodgkin's disease or other hyperplastic disorders of the lymphoid tissue be questioned regarding their tolerance of alcohol. They found the symptom, which they termed "alcohol-pain," in 9 of 62 patients with Hodgkin's disease. Dawe [5] recently reviewed 300 proved cases of Hodgkin's disease and found no mention of alcohol pain in this group. Hoster and co-workers [6] in their extensive review of the literature on Hodgkin's disease, did not report alcohol pain as a symptom of the disease.

In the 15 cases reported in the literature, the pain produced by the ingestion of alcohol had not been present previously. One of the 15 patients had an acute onset of intense generalized pruritus as her response to alcohol. The pain has been variously described as intense,[7] acute,[3] distressing, burning, or "terrible." It comes on during the consumption of the beverage or at an interval reported as "immediately after," "almost immediately," "in a few minutes," or " five minutes later." The longest reported latent period between ingestion and pain was 15 minutes.[2] The pain in the 15 reported cases lasted from 10 minutes to an hour and usually passed away spontaneously, although two patients required opiates for relief. One patient was in the habit of taking two analgesic tablets before having a glass of beer. Paresthesia occurred as the pain abated in 2 of the 15 cases.

The amount of alcohol required to produce pain in sensitive patients is small, being variously reported as "a glass of beer," or "one or two mouthfuls of beer, brandy, or sherry." The beverage did not produce any other effects of an allergic nature in the 15 reported cases. Zanes [7] stated that "The amount of alcohol in a sherry wine gelatin dessert is sufficient to produce severe pain when disease activity is present."

The pain is located in the regions of granulomatous deposits found in Hodgkin's disease; in several of the 15 patients it was felt in new masses that had recently appeared externally. It was localized in the chest in eight patients and extended into the arms in three of these. The first evidence of recurrence was provided, in two

cases,[4] by the onset of alcohol pain at the site of the bone lesions in the ischium and sacrum respectively; the pain preceded radiological evidence of recurrence in both cases. The phenomenon of alcohol pain disappeared after treatment of the underlying disease in 7 of the 15 patients.

There is no known cause for alcohol sensitivity in patients with Hodgkin's disease. Hoster [1] stated that

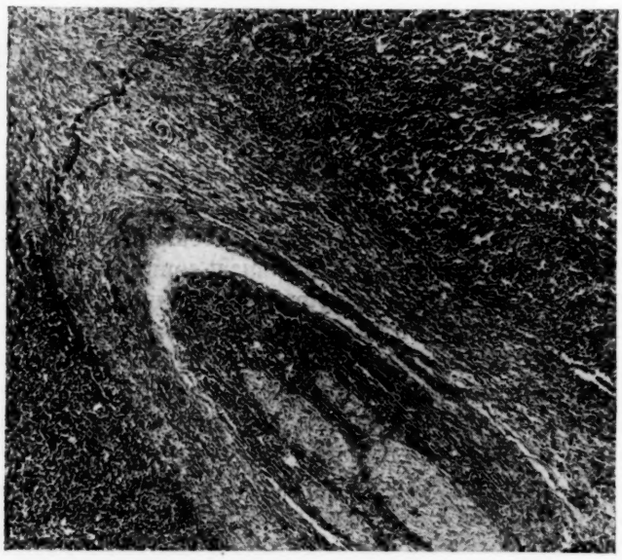

Fig. 1.—One type of involvement of a peripheral nerve in Hodgkin's disease. Obliquely sectioned nerve (pale areas in lower center) is ensheathed by dense, hyaline perineural fibrosis as it passes between two active foci of Hodgkin's disease (upper right and lower left) (hematoxylin and eosin; × 50).

"edema of the lesion [may] be present under these conditions." Other workers [3] examined the effect of various vasodilating drugs in Hodgkin's disease and found that glyceryl trinitrate ointment applied to the skin over the

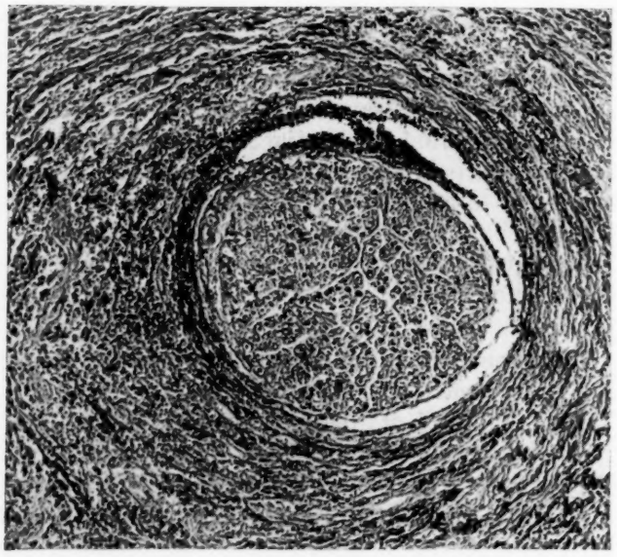

Fig. 2.—Another type of involvement of a peripheral nerve in Hodgkin's disease. A nerve fascicle is completely surrounded by a specific pathological process. The clear space about the nerve is artefact due to shrinkage in fixation. Sternberg-Reed cells are visible to the left of the nerve, which is transversely sectioned (hematoxylin and eosin; × 100).

enlarged lymph nodes produced no pain and that subcutaneous injection of 0.5 mg. of histamine and, later, 2 ml. of nicotinic acid produced marked signs of vasodilation but no pain; however, in the same persons the oral administration of 10 ml. of 50% alcohol solution produced an immediate attack of pain.

Release of histamine at the site of the lesion has been suggested as a possible mechanism by Burchell.[8] Histamine has been isolated from the eosinophil,[9] and this cell is occasionally found in the lesions of Hodgkin's disease. The sections of tissue in our cases were reviewed, and the eosinophils were found to be "inconspicuous" when present.[10] Furthermore, eosinophilia and eosinophilic infiltration are not essential or even prominent features in the pathological diagnosis of this disease. Dawe,[5] who has studied this disease extensively, points out that in many cases of the granulomatous type of Hodgkin's disease the lesions are characterized by the presence of striking deposits of hyaline fibrous material, usually most pronounced about the smaller arteries. Occasionally one finds similar deposits of this material surrounding nerves that have become incorporated in the lesions (fig. 1). It would appear that swelling, either of

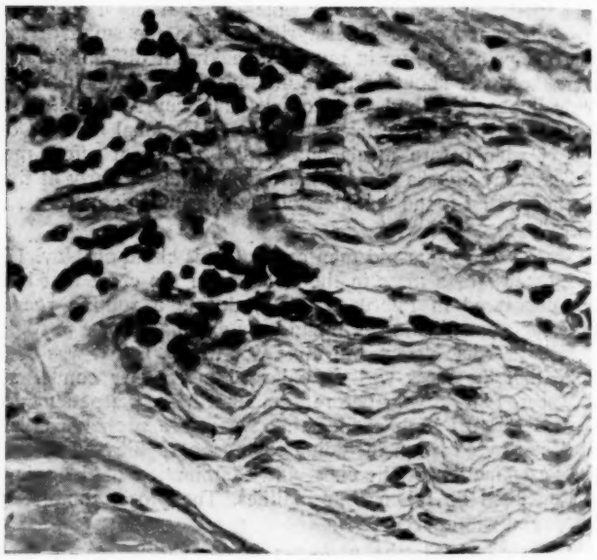

Fig. 3.—A third form of neural involvement in Hodgkin's disease. Two small nerves adjacent to the Hodgkin's process (not in photomicrograph) show plasma cells, lymphocytes, and an occasional eosinophil in their perineural lymphatics. Sternberg-Reed cells are absent in this lesion (hematoxylin and eosin; × 280).

the nerve or of the hyaline material ensheathing it, would result in mechanical compression of the nerve with resultant localizing symptoms. It is postulated that alcohol may produce pain by inducing swelling in one, or perhaps both, of these elements. The lesions of Hodgkin's disease may also involve peripheral nerves by surrounding them (fig. 2) and by invading the perineural lymphatics (fig. 3).

De Winter [4] has expressed the belief that repeated test doses of alcohol are of value in detecting a recurrence of the disease in patients under treatment. Morton,[11] writing on the diagnosis and treatment of lymphoblastoma, stated that pain frequently precedes new tumor formation in known cases of Hodgkin's disease and that, if careful study is made, portals for radiation therapy are usually found that will control the extension before actual tumefaction occurs. The alcohol-sensitivity test

may reveal recurrences, as in De Winter's cases, before any radiographic change is seen. Hoster [1] stated that this test is of value in estimating the effects of treatment in the disease.

Alcohol sensitivity, or the symptom of alcohol pain, seems to be more than a coincidence in these people. Any person suspected of having this disease should be questioned about his ability to use alcohol. When alcohol pain is reported by the patient, a thorough search for Hodgkin's disease should be made by the physician.

Summary

This paper reports four cases of proved Hodgkin's disease in which the symptom of pain after the ingestion of alcohol was prominent. It is recommended that any patients suspected of having Hodgkin's disease be questioned about any symptoms related to the use of alcohol. Anyone reporting pain on the ingestion of alcohol should be examined carefully for evidence of systemic disease. Other authors have expressed the belief that the alcohol-sensitivity test may be of value in detecting recurrence of treated Hodgkin's disease and in evaluating results of treatment.

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EXPERIENCES WITH PREFRONTAL LOBOTOMY FOR INTRACTABLE ULCERATIVE COLITIS

PRELIMINARY REPORT

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and
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A wide variety of psychiatric illnesses has been treated by prefrontal lobotomy in recent years. However, reports of this operation in cases of psychosomatic disease are relatively scarce. In a symposium on chronic ulcerative colitis in 1948, Meyers and Sweeney [1] first suggested use of prefontal lobotomy "for those cases which are conceded to be beyond the pale of psychiatric rehabilitation . . . if and when it is generally agreed that conservative therapy has proved ineffectual." We have found reported in the literature one case of a patient with chronic ulcerative colitis, associated with severe psychiatric disease, who was treated successfully with bilateral prefrontal lobotomy.[2] In a personal communication to us, Pool [3] has reported on a similar case concerning a patient who had been treated successfully with bilateral topectomy.

The five additional cases to be reported were chosen from a large number of patients with ulcerative colitis under the care of gastroenterologists. The diagnosis had been verified by sigmoidoscopy and barium enema. Failure of medical and psychiatric management was the basis for selection of candidates for lobotomy. Each of the patients had been examined by a general surgeon, who, because of the patient's poor physical state, had decided against colectomy. Preoperative psychiatric evaluation revealed that each of the five individuals to be reported on had varying degrees of obsessive-compulsive behavior, deep-seated hostility, and periods of depression.

• Five patients had varying degrees of obsessive-compulsive behavior, deep-seated hostility, and periods of depression in addition to chronic ulcerative colitis of such long standing and severity that colectomy was deemed inadvisable. These patients were selected for lobotomy because medical and psychiatric management had both failed.

In three cases the effects on the colon were strikingly beneficial; the frequency of defecations became normal, and the patients gained weight. In a fourth case a second operation for more extensive division of the white matter had only temporary benefits, and a colectomy undertaken as a last resort was followed by a fatal septicemia. In the fifth case, the lobotomy was followed by the appearance of a voracious appetite, and intestinal obstruction with perforation ended in death a week later.

Chronic colitis can result in irremediable fibrosis and loss of sphincter control, after which lobotomy cannot afford complete relief. The indications for this operation were persistent bloody diarrhea despite intensive medical management, weight loss exceeding 25% of the normal, and psychiatric symptoms that proved refractory to treatment. In three patients selected by these criteria, lobotomy was followed by complete remission of their colitis.

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Read at the Houston Neurological Society, Third Annual Meeting, March 18 and 19, 1955.

Report of Cases

CASE 1.—A 43-year-old housewife had a history of ulcerative colitis for 20 years. She had been under the joint care of a gastroenterologist and a psychiatrist. In addition to her chronic ulcerative colitis, she was subject to periodic depression and had made two attempts at suicide in January, 1950. Efforts to treat the depressive reaction by insulin coma were discontinued shortly thereafter, since she was unable to tolerate this form of therapy.

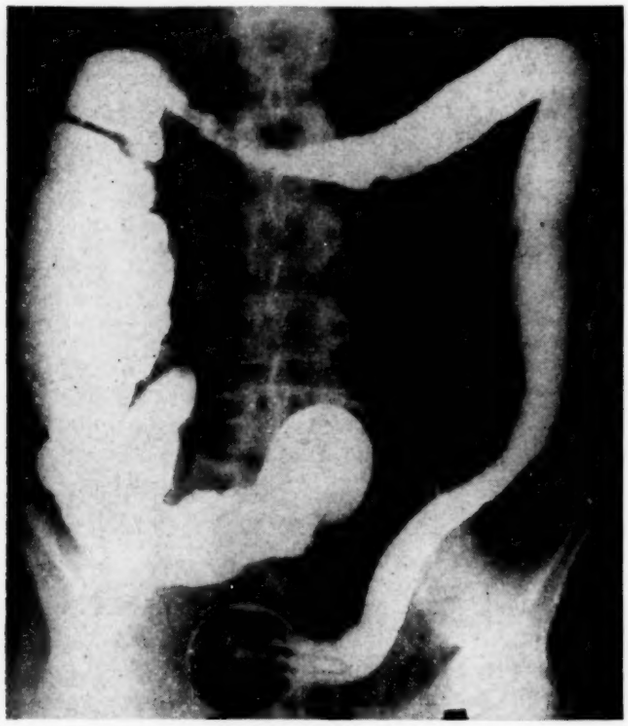

Fig. 1.—Preoperative barium enema done on patient in case 1.

As a result, prefrontal lobotomy was considered, and in January, 1950, she was seen by the neurosurgical consultant. At that time, she was having 25 bloody stools a day and weighed 106 lb. (48.1 kg.). On Jan. 30, 1950, a bilateral prefrontal lobotomy was carried out under direct vision with a sectioning of the white matter in the coronal plane. As expected, the depressive reaction responded well to surgery, but, much to the surprise of everyone concerned, the ulcerative colitis was also greatly improved.

The number of stools a day gradually decreased from 25 to 3, and the patient began to gain weight shortly after surgery. Within a year her weight reached 130 lb. (59 kg.), and it has remained approximately at this level. The colitis became quiescent, and it, too, has remained so. Whereas a colectomy had been considered prior to the prefrontal lobotomy, abdominal surgery was considered unnecessary after lobotomy. She has made an excellent readjustment to her home and community in the five years since her surgery. Unfortunately, in the course of her illness she had lost anal sphincter control as a result of ulceration and fibrosis in the rectum. The sphincter function has not returned. A comparison of the barium enema prior to lobotomy (fig. 1) with a repeat barium enema two years after lobotomy (fig. 2) reveals interesting changes in intestine configuration. Preoperatively, the colon showed a tubular rigid configuration with shortening and loss of haustrations. By comparison, the barium enema done after lobotomy reveals a lengthening of the intestine, increased pliability, and a moderate return of haustrations.

CASE 2.—A 28-year-old housewife had had ulcerative colitis for six years. In addition, she was an obsessive-compulsive individual with a severe chronic anxiety state. Exacerbations of the colitis were coincident with serious conflicts with her domineering mother, with whom she and her husband lived. After failure to control either her psychiatric problems or her colitis by conservative means, she was recommended for prefrontal lobotomy. Prior to the lobotomy, she was having approximately eight bloody stools a day, and she had lost 20 lb. (9.1 kg.) over a period of a year. On Jan. 20, 1954, a bimedian lobotomy was done, sectioning the inferior-median quadrants in the coronal plane, under direct vision. The anxiety reaction and the compulsiveness responded well to the surgery, and, within a month's time, she was readjusting to a happy home life. The number of stools decreased within one week of lobotomy to three a day, and her colitis has remained quiescent over the 14-month follow-up period. At present she has one or two normal stools a day. Incidentally, this patient had a persistent anal ulcer that was refractory to treatment for several months prior to lobotomy. After lobotomy and subsidence of the colitis, the ulcer healed spontaneously within a few weeks' time.

CASE 3.—A 32-year-old housewife has had intermittent attacks of ulcerative colitis for 10 years (fig. 3). She was noted to be an overly meticulous individual with almost fanatical attention to the details of housekeeping and an excessive concern over inconsequential situations in everyday life. She had been hospitalized in May, 1954, because of her colitis and had been unable to get out of bed for one and one-half months during this hospitalization because of the frequency of bloody stools. Electric shock therapy was considered during this period but was withheld because of the condition of the patient. During this three-month hospital stay prior to lobotomy, her weight decreased from a normal of 130 to 85 lb. (59 to 38.6 kg.). Prior to lobotomy, she had 24 stools a day. On Aug. 27, 1954, a bimedian lobotomy was done similar to the procedure for case 2. Within two weeks of the operation, she began to gain weight and has continued to do so. The number of stools lessened

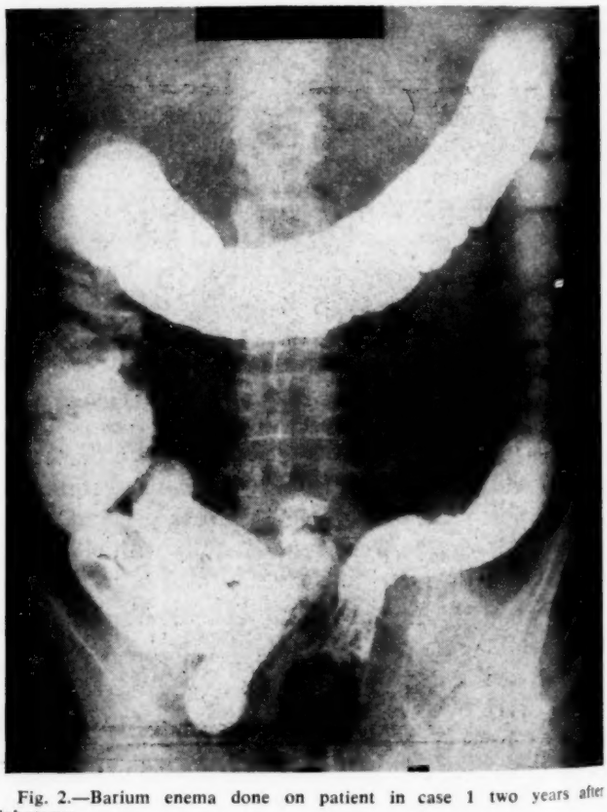

Fig. 2.—Barium enema done on patient in case 1 two years after lobotomy.

gradually, and, at present, she is having four stools a day. The temperature graph is particularly striking (fig. 4). Prior to lobotomy, this patient had continuous fever with a temperature spike to at least 101 F (38.3 C) almost every day for three months. Within 48 hours after lobotomy, the temperature returned to relatively normal levels and has remained so ever

since. Throughout her four month hospitalization, her nursing care and environment remained constant. During the 10 day preoperative period and the postoperative period, she was seen by the same groups of doctors and there was no change in her medical management, except for prophylactic treatment with penicillin 48 hours preoperatively and one week postoperatively. Previously she had received therapy with penicillin and other antibiotics, which had not influenced the course of her illness.

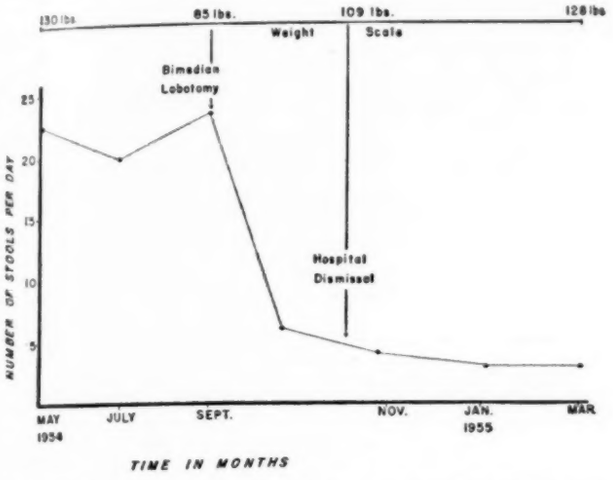

Fig. 3.—Changes in weight and number of stools after bilateral prefrontal lobotomy of patient in case 3.

CASE 4.—A 46-year-old male house painter had ulcerative colitis for two and one-half years. He was an extremely tense, exacting individual who had frequent periods of mild depression. Repeated bouts of bloody diarrhea necessitated continuous hospitalization beginning in June, 1954, at which time he was having nine stools a day. Intensive medical and psychiatric management failed to control the colitis, and he was considered for prefrontal lobotomy. By November, 1954, he weighed 94 lb. (42.6 kg.) and was having 10 stools a day. On Nov. 16, 1954, a bimedian lobotomy was carried out with temporary beneficial effect on the number of stools a day for a two-week period. At the end of this time, he had an exacerbation of the colitis, and by December, 1954, he was having 12 stools a day. We felt that we had been too conservative in our bimedian lobotomy and therefore carried out an extensive bilateral prefrontal lobotomy on Dec. 23, 1954. Since that time, the patient has had three to five stools a day and his weight has been stable at about 100 lb. (45.4 kg.). As yet, it is too early to evaluate this result.

CASE 5.—A 40-year-old common laborer had ulcerative colitis for one and one-half years. His symptoms of generalized weakness and frequent bloody stools forced him to quit work. In July, 1954, he was hospitalized for the third time because of ulcerative colitis. Psychiatric evaluation revealed a severe anxiety state and deep-seated resentment centered about a marital conflict. During his six-month hospitalization, he had a persistent bloody diarrhea with 8 to 10 stools a day. He had lost about 50% of his total body weight. On Oct. 29, a perforation of the colon occurred, followed by generalized peritonitis. He was treated conservatively, since his near-cadaveric state precluded laparotomy. He seemingly recovered from this complication, and on Dec. 2, 1954, a bimedian lobotomy was done. Immediately after lobotomy, he developed a voracious appetite. One week after lobotomy, a large intestine obstruction occurred in association with a perforation and he died. Autopsy revealed the cause of death to be the obstruction and perforation. The brain appeared unremarkable, except for the lobotomy incisions.

Comment

The representation of the autonomic nervous system at the cortical level has become a subject of growing interest in neuroanatomic literature. In 1947, Ward and McCulloch [4] published an account of their findings concerning the projections of the frontal lobe onto the hypothalamus in monkeys. They demonstrated connections between the premotor area and the mammillary nucleus, lateral hypothalamic area, and posterior hypothalamic area. In addition, they also found projections from the orbital surface of the frontal lobe to the supraoptic nucleus, paraventricular nucleus, and posterior hypothalamic nucleus. Clark and Meyer [5] substantiated this work by similar animal experimentation. In detailed pathological studies of two human brains after bilateral prefrontal lobotomy, Meyer [6] also found evidence of a direct pathway from the frontal cortex to the mammillary body.

In addition to the laboratory investigations in monkeys and the pathological study of human brains, clinical evidence of corticohypothalamic connections has also been collected. Rinkel and co-workers,[7] Pool and Ransohoff,[8] and Livingston, Chapman, and Livingston [9] have all demonstrated alterations in function of the autonomic nervous system after stimulation of various areas of the frontal lobe and cingulate gyrus. From these studies there is ample evidence to indicate that the premotor area, orbital surface of the frontal lobe, and cingulate gyrus project on the hypothalamus and serve an autonomic regulatory function.

The control of the hypothalamus over the paraspinal sympathetic ganglions, vagus nerves, and sacral plexus is well known. Unfortunately, the details of the physiology of the autonomic innervation of the colon are less clear. Animal experimentation has shown that the colon derives its parasympathetic supply from two sources.[10] The vagus nerve is said to innervate the proximal one-half of the colon, whereas the sacral plexus is said to supply the distal one-half. Recent experiences with presacral neurectomy, however, tend to cast doubt on the latter statement.[11] The fibers of the sympathetic nervous system supply the colon directly by investing the major arteries and their branches.

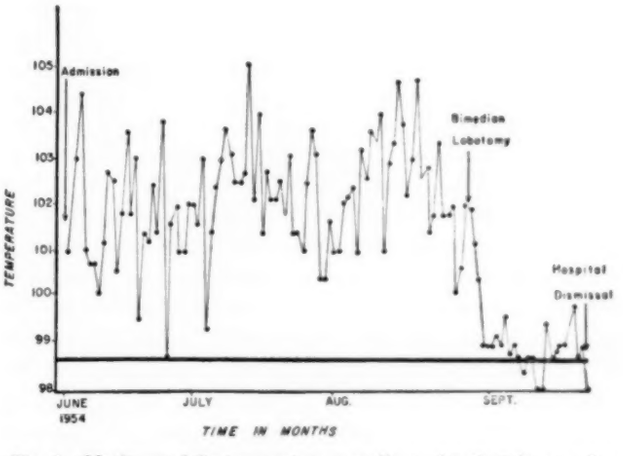

Fig. 4.—Maximum daily temperature recordings of patient in case 3.

In susceptible individuals, stressful life situations will produce an exacerbation of ulcerative colitis. This expression of emotion through abnormal function of the colon requires that the autonomic pathways from the cortex to the colon be intact. In attempting to explain

the beneficial effect of prefrontal lobotomy upon patients with chronic ulcerative colitis, we believe that there are two possibilities—first, that the lobotomy alters the patient's personality in such a way that he no longer expresses his emotions through his colon or, second, that the lobotomy incision actually severs autonomic association fibers between the cerebral cortex and hypothalamus. We cannot attribute improvement to nonspecific surgical intervention alone, since it has been shown repeatedly that other surgical procedures, such as hemorrhoidectomy, ileostomy, or colectomy, frequently are followed by exacerbations of colitis.

It is difficult to formulate rigid indications for prefrontal lobotomy for intractable ulcerative colitis. Nonetheless, we are guided in the choice of candidates for surgery by the following general principles. Persistent bloody diarrhea in spite of intensive medical management over a period of months is the prime requisite. Associated weight loss in excess of 25% of normal and psychiatric symptoms that are refractory to therapy are additional factors that warrant consideration. It obviously is preferable to carry out lobotomy prior to fibrosis of the anal sphincter and prior to perforation of the large intestine. After prefrontal lobotomy, the patients in this series have been examined at intervals to exclude changes suggestive of malignancy in the colon.

The term bimedian lobotomy, as we have used it, indicates a section of the white matter in the coronal plane, limited to the inferomedial quadrants of the prefrontal regions. The entire procedure is carried out under direct vision. We have been impressed with the relief of disturbing psychiatric symptoms by this limited prefrontal lobotomy, and we have found less distortion of the overall personality. The transitory postoperative confusion after bimedian lobotomy is minimal, and the period of psychiatric rehabilitation has been reduced.

Although these five cases are an inadequate group from which to draw conclusions, we feel that the good results to date justify this preliminary report. As the length of follow-up increases and as additional patients are operated on, we will be able to arrive at a true evaluation of prefrontal lobotomy for intractable ulcerative colitis. For the present, we are sufficiently encouraged to continue to carry out this procedure in certain selected cases.

Summary

Five patients with intractable ulcerative colitis associated with varying degrees of psychiatric disease had bilateral prefrontal lobotomy. Three patients show complete remission of their colitis. One patient is satisfactorily improved in a short-term follow-up, and a fifth patient died of a complicating intestinal obstruction in the postoperative period. We are sufficiently encouraged by these results to continue to carry out the procedure in selected cases that have failed to respond to adequate medical and psychiatric management.

Addendum

As of Oct. 15, 1955, patients in cases 1, 2, and 3 are progressing well. The patient in case 3 has been having only one stool daily the past four months and is halfway through her first pregnancy. The patient in case 4 returned to the hospital in April because of increase in his stools to six to eight daily. He continued to do poorly, and, after additional study, colectomy was decided on. Colectomy was carried out July 25, and for a few days he did well. However, septicemia intervened, and he died on Aug. 11, 1955. Autopsy disclosed septicemia to be the cause of death.

525 N. W. 11th St. (3) (Dr. Wilkins).

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Post-Thrombophlebitic Syndrome.—Contrary to the opinion of some . . . surgeons in this field, we advocate radical surgical treatment for most of the cases presenting the more serious complications of the post-thrombophlebitic syndrome. Our surgical procedures . . . include saphenous vein ligation and stripping, Homans' type of the Kondoleon procedure, interruption of the incompetent perforator veins after the method of Linton, wide excision of the ulcer and devitalized skin, and extensive skin grafting. . . . Simultaneous performance of all of the surgical procedures indicated is more important than any one procedure. We continue to perform superficial femoral vein ligation in conjunction with the other surgical measures when the venous reflux component is great. If one is to accept, as the cause of the large secondary varicosities of the post-thrombophlebitic state, venous reflux via the superficial femoral vein and communicators, one must accept superficial femoral vein ligation as logical in the treatment of these cases. Superficial femoral vein ligation is contraindicated when the chief sequela of the post-thrombophlebitic syndrome is lymphedema.

Sixty cases having had radical surgical treatment for the post-thrombophlebitic syndrome have been followed up. . . . Radical surgery results in eradication of the diseased skin, of the fibrosed and indurated subcutaneous tissues, and of the contained varicosities. The incompetent communicator veins are effectively interrupted, and the reflux down the diseased femoral vein and down the varicosed saphenous vein is prevented. Leg ulceration is effectively cured. After radical surgery the patient has a limb with normal skin resting on well-vascularized normal muscle. Recurrence of leg ulceration is minimal and rare, and the slight lymphedema that persists is now readily controlled and comfortable. . . . No matter how bad a post-thrombophlebitic or venous stasis leg appears, there is a normal leg underneath at the muscle level. . . . Radical surgery is far superior to medical management for the seriously disabled post-thrombophlebitic leg.—Eugene Lowenberg, M.D., and Dorival Mascaro, M.D., An Evaluation of Radical Surgery for the Post-Thrombophlebitic Syndrome, *A. M. A. Archives of Surgery*, January, 1956.

USE OF CHLORPROMAZINE IN TREATMENT OF CERTAIN GASTROINTESTINAL DISTURBANCES

PRELIMINARY REPORT

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• Chlorpromazine was given, generally in doses of 25 mg. three times a day, to 62 patients with various gastrointestinal symptoms. The majority of the patients had psychosomatic gastrointestinal disease, and in 21 the indigestion was associated with an anxiety state; all presented problems that had not been solved by currently employed medical regimens.

Forty-one of the patients experienced subjective improvement, 18 showed subjective intolerance with refusal to continue this medication, and 6 experienced actual drug sensitivity, which was manifested by such symptoms as skin rashes. The drug was of special value in alleviating certain gastrointestinal symptoms in which the psychosomatic factors were dominant and in increasing the patient's tolerance to the discomforts of his illness.

The drug chlorpromazine [10-(γ-dimethylaminopropyl)-2-chlorphenothiazine hydrochloride] has a versatility rarely encountered among the many preparations employed currently in medical practice. Originally employed clinically in this country for the control of nausea and vomiting of many causes,[1] as well as for certain neuropsychiatric disturbances,[2] the drug is now used widely for such diverse conditions as the control of intractable pain of cancer,[3] treatment of persistent hiccups,[4] and alcoholism.[5] In addition, it seems to be of value in the preoperative and postoperative management of surgical patients,[6] in the induction of artificial hibernation,[7] and in many other medical situations. When one reviews the numerous reports dealing with the use of this drug, it would seem that there is one common denominator to its clinical applications. This consists of the effect of the drug in suppressing the patient's awareness of adverse physical or emotional stimuli, the result being to permit the patient to tolerate such adverse stimuli with little or no subjective discomfort.

From the pharmacological standpoint, the drug is a weak antihistamine and antispasmodic. It is referred to in the French medical literature as a "ganglioplegic" and apparently has no one specific site of action. It appears that the drug acts at cortical and subcortical levels in the cerebrum,[8] as well as peripherally on ganglions. It has a definite inhibitory effect on the isolated intestinal preparation of both the rat and the rabbit.[9] Theoretically, therefore, this drug should be of value in the treatment of certain gastrointestinal disturbances.

Material and Methods

This report is based on observations of the effects of chlorpromazine in a group of 62 patients seen either in private practice or in the gastrointestinal clinic of a large local hospital. All of the patients had illnesses involving the gastrointestinal tract that had been resistant to other therapeutic regimens and that for numerous reasons presented therapeutic problems. In not all instances was the disease primarily gastrointestinal. The majority of patients in the group actually had psychosomatic gastrointestinal disease. In several instances there was severe organic involvement of the gastrointestinal tract in what was felt to be the primary psychosomatic disturbance (for example, severe chronic ulcerative colitis and refractory peptic ulcer). One patient (the first case reported here) was found to have carcinoma of the head of the pancreas effectively masked symptomatically for several months by chlorpromazine. The conditions treated are presented in table 1. The ages of the patients in this series ranged from 18 to 78 years.

As was stated before, all of these patients presented problems in therapy that were not solved by currently employed medical regimens. In nearly every case, the patient was given chlorpromazine either in hope of augmenting symptomatic relief obtained from medicaments and diet prescribed or to replace whatever medicaments had been taken with poor results. In a number of instances, the patients treated were receiving psychotherapy for the emotional disturbances underlying the digestive symptoms.

In a study of this sort, it is difficult to evaluate in a clear-cut quantitative manner the results of treatment. It is therefore necessary for each patient to serve as his own control. Observations are based on the patient's report of his own feeling of physical or "psychosomatic" well-being while receiving chlorpromazine, as compared to pretreatment feeling. In a number of instances, placebo preparations were substituted for the active drug and the patient's response after a suitable time had elapsed was recorded. No attempts were made specifically to determine by x-ray examination the rate of healing of peptic ulcer. Except in specific instances to be reported, random blood cell counts, urinalyses, and liver function tests were made and were found to be normal and so have been deleted from the observations. Patients responding in a favorable manner to the drug have received an average dose of 25 mg. three times a day. Duration of the treatment has ranged from two weeks to as long as six months in some cases.

Results

Over-All Response.—The over-all results of therapy with chlorpromazine in this group of patients are presented in table 1. Forty-one (66%) responded favorably to the use of the drug from the standpoint of subjective improvement. Patients whose response was satisfactory

From the Gastrointestinal Clinic, Cedars of Lebanon Hospital, Los Angeles.

The chlorpromazine used in this study was supplied through Mr. William E. Kirsch, Smith, Kline & French Laboratories, Philadelphia.

in general began to be aware of the improved subjective state within 24 hours after administration of the drug was begun. At the onset of therapy, some of these patients complained of drowsiness, but, after two or three days of treatment, this sedative effect seemed to subside, probably as a result of the development of tolerance to this particular action of the drug. To avoid the initial drowsiness, the drug was administered in gradually increasing doses over a two-or-three-day period until the desired dosage schedule was reached. No other clinical evidences of tolerance to the drug were found. A number of patients in this group have taken the drug over a period of months without having to increase the amount employed. The matter of individual dose requirements for the drug, however, is a difficult one to determine. Unlike some medicaments that can be adjusted in dose to the patient's age or weight or the severity of the illness dealt with, the individual dosage requirement for chlorpromazine is more difficult to establish. To a great extent, at first a trial-and-error method was resorted to. It

TABLE 1.—*Summary of Patients Treated and Results of Treatment*

Diagnosis	Total No. of Patients Treated	Results	
		Improved	Failure
Duodenal ulcer (refractory)	5	5	..
Gastric ulcer (persistent pain)	2	2	..
Chronic ulcerative colitis	7	1	6
Anxiety state with associated indigestion	21	19	2
Regional enteritis	1	..	1
Labyrinthitis (with nausea)	1	1	..
Functional nausea and vomiting	2	2	..
Pregnancy with nausea and vomiting	2	2	..
Carcinoma of pancreas	1	1	..
Biliary colic	1	1	..
Senility with indigestion	3	2	1
Intestinal neurosis	4	3	1
Hysterical distention	7	1	6
Depression, constipation, gas	4	..	4
Hypertensive encephalopathy with vomiting	1	1	..
Total	62	41 (66%)	21 (34%)

may well be that some of the "failure" patients might have been helped had they received other initial doses of chlorpromazine than those administered. In a general way, it seems that patients whose digestive disturbances seemed to be associated with or accompanied by anxiety responded most favorably and to the relatively smaller doses of the drug. This applies also to the patients with gastralgia of psychosomatic origin; tense, anxious patients with duodenal ulcer; and the two patients with severe nausea and vomiting of pregnancy.

The patients with peptic ulcer presented a somewhat special problem. Those with duodenal ulcer received chlorpromazine in conjunction with the usual dietary regimens and anticholinergic drugs. It has been the practice to administer a sedative preparation in conjunction with the anticholinergic drugs because this often potentiates the physiological effect of the drug employed and serves a useful purpose in slowing the patient's activity and reducing his irritability and awareness of pain. However, there are always refractory patients with ulcers who object to the sedative preparations on the grounds that these slow them too much to cope well with their everyday work problems. These patients, usually men, present a trying therapeutic group because, in essence, their complaints and behavior constitute a denial of their expressed desire to recover. With chlorpromazine therapy, this argument on the part of the patient can be eliminated. It has seemed, further, that, with the aid of this drug, such patients become more accessible for at least some superficial form of psychotherapy, and, in two instances, formal psychotherapy has seemed to proceed in a more satisfactory manner. Our patients with peptic ulcer have continued the use of the drug even after acute attacks have subsided, and at the same time they have continued the use of anticholinergic drugs and modified bland diets. It is hoped that this type of regimen will in time permit the "refractory" ulcer patient to alter the behavior and reaction pattern responsible for the persistent illness and disability.

A question may be raised about the use of chlorpromazine in the treatment of gastric ulcer, since this is felt by many to need surgical treatment. The two patients listed in table 1 were elderly men, felt to be very poor operative risks and believed to have benign lesions on the basis of all diagnostic studies. In both cases there was prompt relief of pain, and in one, early x-ray evidence of healing was obtained. In both cases, the drug was employed along with the usual medical regimen. Another group of the patients in our study had histories of persistent or repeated bouts of nausea, gas, abdominal distention, and other purely functional digestive disturbances. These patients have, over the years, seen many physicians and have had many forms of medical therapy with either equivocal relief or failure. There are no physical, x-ray, or laboratory signs of organic disease, and, when the patients are seen, some form of psychotherapy is uniformly attempted. In a general way, the younger patients in this group and similar groups seen by many physicians will often accept psychotherapeutic approaches and respond fairly well to therapy. Most of the patients of this type whose response to chlorpromazine was satisfactory were in the younger age groups (under 45 years). In this group there are a few persons who are not willing or able to accept therapeutic approaches other than the medical. Some of these patients have taken chlorpromazine for prolonged periods with continued symptomatic relief, and when placebo preparations are substituted for the active medicament, they begin to have recurrences of distress after a period of about 48 hours, during which apparently the remaining drug is excreted.

Sensitivity in Improved Patients.—Of the 41 patients who responded favorably to the drug from a symptomatic standpoint, 4 patients had to discontinue use of the drug because of sensitivity. A 28-year-old man who had had an ileostomy after total colectomy for chronic ulcerative colitis found that when anxious he developed increased flow from the stoma, which was relieved by the use of corticotropin (ACTH) or chlorpromazine. The latter was found to cause, in his case, a glossitis that subsided when use of the drug was stopped. In another instance, a 40-year-old woman developed nausea after a trying emotional upset. After other therapeutic regimens had failed, she was given chlorpromazine, with immediate symptomatic relief in a matter of 72 hours. However, on the third day, she began to experience ulcer-like epigastric pain,

with relief on intake of food and alkali. When this was reported, on the fifth day of chlorpromazine treatment, administration of the drug was stopped, and the patient obtained relief of her distress after a few days on a diet of bland foods and antacids. The other two patients with adverse reactions to the drug require more detailed reports. In the first, the action of the drug may well have masked the course of a carcinoma of the head of the pancreas, and the patient at the same time may have had a chlorpromazine-induced bile stasis with recovery.

A 58-year-old woman, first seen in March of 1954, had a three-month history of nausea, vomiting, anorexia, and vague abdominal pain, all commencing shortly after the death of her mother from cancer. She had been seen by physicians in two different cities before arriving in Los Angeles, and all tests, x-rays, and other clinical studies had been negative. It was felt that the illness represented a nervous reaction, and the patient herself attributed her illness to the emotional shock of the loss of her mother, to whom she had been abnormally close. When first seen, all of the previously made gastrointestinal x-ray studies were repeated and found to be negative. Stools did not contain evidences of occult blood, undigested food, or any infectious organisms. Her condition began to improve with the use of anticholinergic drugs, sedation, bland diet, and the supportive vitamins. In addition, some superficial psychotherapy was carried out. After a three-month period of gain in weight and strength, the patient had a new emotional crisis and began to have a relapse, with flare-up of the preexisting symptoms. At this time, she was started on therapy with chlorpromazine in addition to her other medication, but use of sedatives was discontinued. The dose of chlorpromazine was 25 mg. four times a day orally. She responded in a remarkable manner to the drug, with rapid relief of abdominal distress, weight gain, improved appetite, and a better psychological state. However, in the fourth week of treatment she developed mild jaundice, with dark urine and light stools but with no preceding fever, pain, malaise, or other symptoms. As this condition was felt to be a chlorpromazine-induced hepatitis, the patient was hospitalized. Liver function studies were in keeping with a cholangiolitis or extrahepatic type of obstruction. The patient was placed on a medical regimen, with the usual supportive dietary measures. She was given corticotropin in the form of a gel twice daily, with gradually diminishing doses. Unfortunately, no liver biopsy was performed, in this case because of the patient's psychological state. She showed a clinical improvement on this regimen, with gradual clearing of jaundice, lowering of alkaline phosphatase levels, and return of pigment to the stools. At no time was there fever. After about three weeks of treatment, liver function tests began to approach normal and she was permitted to be transferred to a midwestern city for recuperation at the home of a daughter. In August, the patient developed sudden persistent upper gastrointestinal obstruction requiring surgical intervention. At surgery, a carcinoma of the head of the pancreas was found to be obstructing the duodenum. There were liver metastases.

It is my feeling that the use of chlorpromazine and subsequently corticotropin (in the treatment of this patient's jaundice) possibly masked the course of her carcinoma, preventing earlier clinical detection. It may well be that the jaundice was caused by a drug-induced bile stasis.

In the second case, a patient who developed a rash due to chlorpromazine was able to continue taking the drug in a small dose with symptomatic relief, only to develop agranulocytosis.

A 55-year-old eccentric woman well known to the clinic was seen for nausea and vomiting of three weeks' duration, probably a result of one of her self-initiated food fads. Careful x-ray and laboratory examinations failed to reveal evidences of an organic lesion, and she was given an antispasmodic-sedative mixture and urged to eat properly of a bland diet. When seen a week later she stated that there had been no relief. It was decided to try therapy with chlorpromazine, and, because of her general make-up, it was felt that she should have 25 mg. four times a day. The following week she reported some improvement, with less vomiting. In order to observe her response, a placebo was given at this time, with prompt return of the old symptoms. She was then to take 50 mg. of the drug four times a day. Returning to the clinic after a week on this regimen, she complained of a rash on her face and the backs of her hands with no itching. Examination revealed a fine, branny rash in the areas exposed to sun. The patient insisted on continuing use of the drug because it had been of great help to her, and this was permitted on a schedule of 25 mg. four times a day. The following week the rash had cleared. She continued use of the drug for about three more weeks before developing a severe, persistent sore throat and low-grade fever. At this time she was found to have a severe pharyngitis and leukopenia (2,300 cells per cubic millimeter with 2% polymorphonuclear cells). The patient received treatment with antibiotics and corticotropin, and she made a complete recovery.

One interesting additional clinical observation in both these cases is the fact that corticotropin was of great therapeutic benefit in the treatment of these severe reactions to the drug.

Failures.—In the group of 21 patients who failed to react in a satisfactory manner, the failures were classified in three main categories (table 2). (Patients who had already obtained symptomatic relief are also included in table in the first two categories.) The first category was

TABLE 2.—*Analysis of Unfavorable Responses to Chlorpromazine**

	Cases	%
Poor tolerance (hypotension, gastric irritability, diarrhea)	6	9
Drug sensitivity	6	9
Subjective intolerance with refusal to continue medication	18	29

* It should be noted that some patients obtained symptomatic relief in the presence of an unfavorable reaction.

subjective intolerance to the drug because of postural dizziness (hypotensive effect), aggravation of preexisting gastric irritability, or diarrhea. However, several of the six patients in this group continued use of the drug in the face of these discomforts, since it seemed to be of some help to their primary illness. The second category of failure consists of the six patients who developed manifestations of drug sensitivity or toxicity, such as skin rash, including the patient with agranulocytosis and the patient with a possible drug-induced hepatitis. In some, favorable clinical response occurred before manifestations of toxic effects developed (three patients had dermatitis and one each glossitis, hepatitis, and leukopenia [agranulocytosis]). The third group of patients consists of those who had various unpleasant subjective reactions to chlorpromazine without any sense of subjective improvement. For the larger part, these patients had discontinued use of the drug without permission. Ten discontinued use of the drug because it had no effect (in five it probably had been given in an insufficient dose); two each because of vague unrest, increased depression, or sedation; and one each because of hallucinations or restlessness. In this group there were two patients who followed a preexisting reaction pattern to medicaments. They expressed some subjective sense of improvement while taking the drug and then suddenly discontinued and refused to resume its use. Both patients had be-

haved in a similar fashion with other medicaments, and it is my feeling that these patients had a great need for the attention that their symptoms demanded and were reluctant to part with their illness. As mentioned before, some of the "failures" might have been salvaged with larger doses of chlorpromazine. The small group of patients in this third category who complained of greater depression consisted of elderly persons, all mildly depressed before treatment and all burdened by multiple gastrointestinal complaints of long duration with constipation as an outstanding symptom. Such patients present trying therapeutic problems; they are frequently seen in large outpatient clinics, and it is unfortunate that as yet no very satisfactory help is available for them. It is probably significant that patients with chronic ulcerative colitis responded poorly to the drug. In general, patients with ulcerative colitis present difficult therapeutic problems and often seem to be intolerant of certain medicaments. The response to chlorpromazine on the part of these patients fits into this pattern.

Comment

These observations suggest strongly that the drug chlorpromazine can be a valuable adjunct in the treatment of certain gastrointestinal disturbances. This applies particularly to its use in the treatment of the psychosomatic digestive disturbances in which there is an associated anxiety or in which the symptom complex itself results from certain anxiety-producing situations. It is of particular value in the treatment of the active, ambulatory patient who avoids the use of sedatives, because after the first few days of therapy with chlorpromazine, the initial sedative effect is no longer manifest. It would seem that some patients receiving therapy with chlorpromazine are more amenable to psychotherapy in some form, and it is hoped that this fact may pave the way to more rational therapy for some of the psychosomatic digestive disturbances. It is my feeling that one must not become dependent on therapy with chlorpromazine alone in the patient who has a favorable response to the drug. It remains important to employ the proper dietary regimens, antacids where needed, and the anticholinergic drugs, as well as psychotherapy. The goal in treating these patients is not reached when the patient becomes asymptomatic. It is reached when he learns to avoid or deal in a more rational manner with those life situations of a stressful nature that are responsible for the illness.

The drug is also of therapeutic value in some of the digestive disturbances associated with pain or other physical discomfort. As stated in the opening paragraph, it would seem that this drug has one over-all function, that of modifying the effect of unpleasant or unwelcome physical or emotional stress on the patient, permitting the stress to be better tolerated.

As is the case with every other medicament, certain patients are found to have sensitivities to chlorpromazine. In the brief experience reported, two suggestive observations can be made. First, it would seem that any minor manifestation of sensitivity if disregarded may become the precursor of a more serious type of reaction. This is suggested by the second case reported. The second observation is that it would seem that corticotropin is of therapeutic value in the treatment of the serious complications of therapy with chlorpromazine. Since liver damage seems to be an occasional manifestation of chlorpromazine sensitivity,[10] one wonders if it is advisable to employ this drug in patients who may have latent or subclinical liver damage. Questioning a number of physicians reveals that there seems to be no clear-cut relationship between the development of chlorpromazine-induced hepatitis and preexisting liver damage; as a matter of fact, the apparently safe extensive use of this drug in the treatment of alcoholics suggests that the hepatitis, when it occurs, must be considered the result of a fixed organic sensitivity to the drug rather than actual chemical damage.

Because the drug produces some postural hypotension,[11] certain persons seem intolerant of the drug because of this side-effect and are either unwilling or unable to take it even in small doses. The same observation applies to a small group of patients who experience nausea or gastric irritation while taking the drug. There is a certain group of patients usually chronically depressed or in need of much attention, which is sought through illness. The patients who fall in one of these categories may deliberately discontinue the use of the drug on some minor pretext. The question of dosage is raised in regard to these patients. In retrospect it would seem that larger initial doses of the medicament might have helped in an effective manner to combat this.

Summary

The drug chlorpromazine seems to be of value in the treatment of certain gastrointestinal disturbances when used in conjunction with other established therapeutic regimens. It is of special value to the patient with digestive disease in which the psychosomatic elements play a major role, especially where there is associated anxiety or irritability on the part of the patient, as well as poor tolerance of the physical discomfort of the illness. It is also of therapeutic value in the treatment of painful gastrointestinal conditions by permitting better tolerance of the discomfort.

Certain patients (29%) are "refractory" to chlorpromazine therapy as well as to other forms of treatment on purely psychic grounds, refusing the drug probably because of the need for continued illness. In certain other cases, minor side-effects of the drug give the patient an excuse for not continuing treatment. There were six instances (9%) of actual drug sensitivity in this group of patients. In two the reactions were severe. The use of corticotropin in the treatment of those with severe reactions is suggested.

Because the effect of this drug is to reduce pain sensitivity and alleviate certain gastrointestinal symptoms, it may mask the existence or course of an intra-abdominal malignancy. One must be most alert to this possibility and not discontinue careful diagnostic steps in suspicious cases, even though the patient has obtained symptomatic relief. It should be noted that use of chlorpromazine in most instances does not lead to cure of the underlying

illness. It does facilitate therapy by permitting better tolerance of the illness and of those circumstances productive of the illness.

436 N. Roxbury Dr.

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CLINICAL EXPERIENCES WITH CARBUTAMIDE, AN ORALLY GIVEN HYPOGLYCEMIC AGENT

PRELIMINARY REPORT

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• Carbutamide, a sulfonamide derivative, has been administered to 31 diabetic patients. Given by mouth, it was found to be absorbed rapidly and excreted slowly, so that satisfactory responses were achieved with maintenance doses of 1 gm. per day. Attempts were made to maintain a level of at least 10 mg. per 100 cc. of blood.

Reduction of hyperglycemia was accomplished with carbutamide alone in some cases. In other cases, the carbutamide reduced the insulin requirement. It was not satisfactory in young persons with unstable diabetes or in the emergency treatment of diabetics in acidosis. Side-effects that occurred in one case were temporary.

The effectiveness of orally administered carbutamide in lowering the blood sugar level indicated that it should be useful in many cases of mild or moderately severe diabetes.

The usefulness of an orally administered active substance that will affect carbohydrate metabolism in the diabetic is obvious. Numerous compounds have been tested, but, until the present time, all either have been ineffective or have had unusual toxicity that precluded their use in clinical medicine. Consequently, when it was learned a compound developed in Germany showed promise as an orally given substitute for injected insulin, a considerable amount of healthy skepticism was generated. Clinical experience with the compound in Germany has extended over 22 months. More than 1,000 clinical cases have been evaluated, without demonstrable toxicity sufficient to contraindicate its use, and it appeared that lowering of blood sugar levels could be effected with a concomitant drop or disappearance of glycosuria in certain types of diabetes. In addition, the insulin dosage could be lowered or stopped in many of these individuals.

The compound carbutamide, 1-butyl-3-sulfanilylurea, designated substance BZ-55 by the German investigators,[1] may be classed with other sulfonamide derivatives that have been shown to lower the blood sugar level. Janbon [2] (1942) first reported induced hypoglycemia in man when investigating sulfaisopropylthiadiazol for its antibacterial effect. Bovet and Dubost [3] showed similar activity for derivatives of this compound. In 1946, Chen and co-workers [4] investigated a similar compound that produced hypoglycemia in normal animals.

Carbutamide was at first evaluated for its antibacterial action in February, 1954, by Franke and Fuchs.[5] These investigators tried the preparation on themselves and noted fatigue, perspiration, hunger, trembling, and a certain degree of euphoria. Blood sugar determinations showed a definite hypoglycemic effect. The drug was then given extensive clinical trial in diabetics at medical centers in Neumünster and Hamburg.

Pharmacology

Carbutamide is quickly absorbed. Within 30 minutes after oral administration of a single 2.5-gm. dose, an appreciable concentration can be demonstrated in the blood as measured by the method of Bratton and Marshall.[6] Maximum values are reached within three to six hours (10 to 15 mg. of free sulfonamide per 100 cc. of whole blood) (fig. 1). The level of total sulfonamide is only slightly higher, the degree of acetylation being 3 to 4 per 100 cc. in whole blood. Six to seven hours after the administration of 2.5 gm. of carbutamide, the blood level of sulfonamide begins to fall slowly. Within two to three hours after the ingestion of this dose, a definite lowering in blood sugar level will occur (fig. 2). Excretion is relatively slow, blood levels of carbutamide di-

From the Lilly Laboratory for Clinical Research, Indianapolis General Hospital.

minishing logarithmically (fig. 3). The drug is found in the urine with approximately 66% as the free form and 33% as the acetylated form.

The site of action of this drug has not yet been completely established. The German investigators had shown

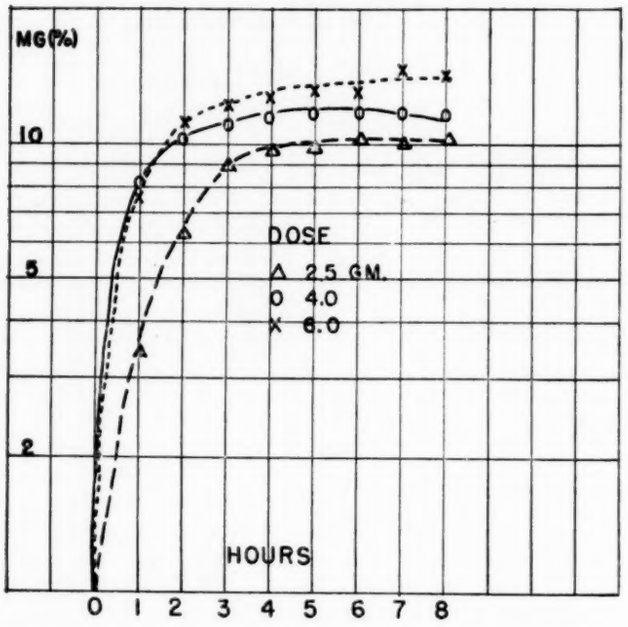

Fig. 1.—Average rise in blood level concentration of carbutamide as sulfonamide in three patients at three dose levels.

that sulfonamides of the *p*-aminobenzinesulfonamideisopropylthiadiazol type would selectively damage the alpha cells of the pancreas in animals,[7] the supposed site of production of glucagon, the hyperglycemic-glycogenolytic factor. Carbutamide has also been found by Ferner [8] to have a similar effect on alpha cells. The exact role of glucagon in carbohydrate metabolism is still unknown, and the effects on alpha cells must still be studied.

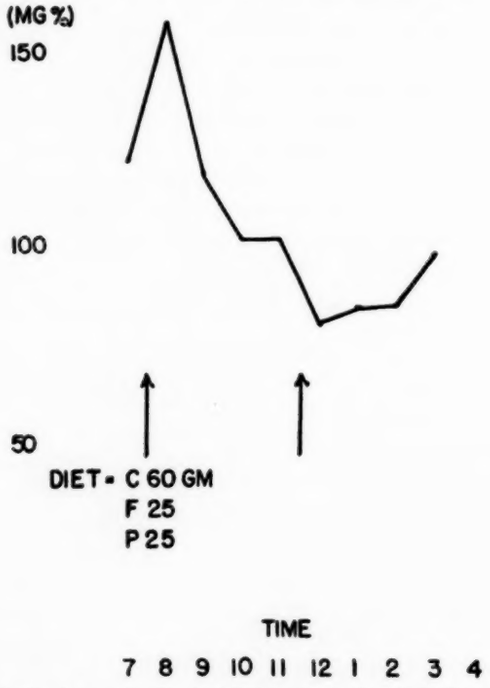

Fig. 2.—Blood sugar levels of diabetic patient after single 2.5-gm. dose of carbutamide given at 7 a. m.

Mirsky [9] has studied the compound as an insulinase inhibitor. He has presented evidence to indicate that sulfonamide derivatives of this type, along with the substance he has tested, act as noncompetitive inhibitors preventing the enzymatic destruction of insulin in vivo. It seems clear, however, from both experimental and clinical evidence, that the material cannot be considered as having an action precisely equivalent to injected insulin. To be effective, some insulin must be present, either endogenous or injected.

Toxicity

The toxicity of carbutamide is low. The German investigators have reported an occasional occurrence of drug fever and drug eruption that subsided promptly on discontinuance of the drug's use. Jaundice is also reported to have occurred in one patient in Germany, but it was indicated that this could be attributed to epidemic hepatitis, since symptoms of the condition had appeared before administration of carbutamide.

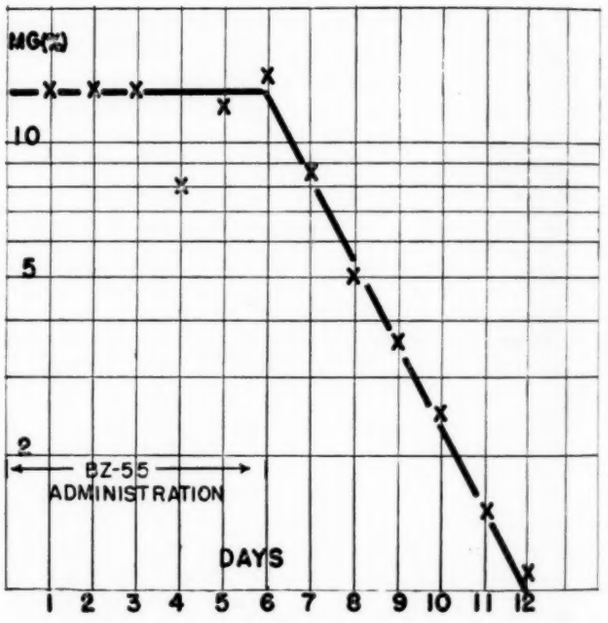

Fig. 3.—Blood levels of carbutamide in patient receiving 2-gm. doses for six days.

In the present studies, all patients had daily examinations for crystalluria, and serial liver function tests, renal studies, and blood cell counts were made. Over 200 urine specimens were examined while the patients were on carbutamide therapy without evidence of crystalluria, even when concentrations of the drug exceeded 200 mg. per 100 cc. Only one patient in our series of 31 has shown any toxic effects to date. Early in the study, very high blood levels (35 mg. per 100 cc.), resulting from excessive dosage of the drug, caused some mental clouding in one patient, which improved rapidly on lowering the dose. After three months of therapy on 1-gm. daily dosage, this same patient developed a skin rash and leukopenia (1,900 white blood cells). Findings of a skin biopsy were not considered specific but were compatible with a so-called drug eruption. Eleven days after therapy ceased the rash was completely gone and the white blood cell count returned to normal. Differential counts after recovery showed a transient eosinophilia.

Clinical Evaluation

This report includes 11 hospitalized patients who were followed in the outpatient clinic after the completion of their hospital stay and 7 patients who received treatment as outpatients only. This group of 18 includes those of the 31 patients who received the drug for the longest time. Patients studied on the metabolic ward were selected at random. In the outpatient subjects, attempts were made to meet certain criteria.

In the hospitalized patients, levels of sugar in the blood [10] and in the urine at 7 a. m., 11 a. m., 4 p. m., and 10 p. m. were determined, and 24-hour quantitative excretion of sugar in the urine was measured daily. Satisfactory control of the diabetes was obtained with measured diet and insulin in order to determine insulin requirements; then insulin therapy was discontinued until hyperglycemia and glycosuria recurred. The patients were then placed on carbutamide therapy, their diets were maintained as before, and the blood sugar, urine sugar, and blood sulfonamide levels were followed.

Because of rapid absorption and slow excretion, satisfactory responses may be achieved with an average loading dose of 2.5 gm. the first day, 1.5 gm. the second day, and 1 gm. daily thereafter. The concentration of carbutamide was determined daily as milligrams per 100 cc. of free sulfonamide in whole blood.[6] Attempts were made to maintain a level of at least 10 mg. per 100 cc.

Table 1 is a summary of results of therapy in the 11 hospitalized patients. Results may be divided into three categories: (1) reduction of hyperglycemia with carbutamide alone, (2) reduction in amount of insulin required to control blood sugar level, and (3) no reduction of hyperglycemia or insulin requirement. An example of each category is reviewed.

CASE 1.—In a 66-year-old white female weighing 165 lb. (74.8 kg.), diabetes was found three weeks prior to admission to the metabolic ward. With an insulin dosage of 45 units, her blood sugar level still averaged 200 mg. per 100 cc. and she had glycosuria, with 4.9 gm. of sugar excreted every 24 hours. Insulin was withdrawn, and in three days her fasting blood sugar level was 252 mg. per 100 cc. and 12.6 gm. of sugar was excreted in the urine every 24 hours. Eight grams of the propyl analogue of carbutamide was given. Five days later, glycosuria was absent and the four daily blood sugar levels averaged 150 mg. per 100 cc. Medication was stopped for the next six days, and the fasting blood sugar level was elevated to 194 mg. per 100 cc. Six grams of carbutamide was given daily for four days. Blood sugar level determinations averaged 125 mg. per 100 cc.

Again carbutamide therapy was discontinued, and the patient was kept on the same diet until the fasting blood sugar level was 200 mg. per 100 cc. and glycosuria recurred (after 17 days), 3.6 gm. of sugar being excreted in the urine every 24 hours. Therapy was restarted with an initial dose of 6 gm. of carbutamide the first day, then reduced to 1 gm. for eight days, and increased to 2 gm. for the remainder of the hospitalization. Glycosuria disappeared, and her fasting blood sugar level averaged 126 mg. per 100 cc. during the last week of hospitalization. The patient was discharged on a regimen of 0.5 gm. of carbutamide twice daily and has been followed in the outpatient clinic for two months at time of writing. Good control has been maintained.

CASE 7.—A 56-year-old obese female weighing 190 lb. (86.2 kg.) had had diabetes for eight years, requiring 85 units of insulin for control. On her admission to hospital, the diabetes was complicated by a diabetic ulcer on the right great toe. After use of 85 units of insulin and a 2,100 calorie diet for four days, the patient's condition was not well controlled. Insulin therapy was discontinued, and the glycosuria and hyperglycemia increased. After three days without insulin therapy, administration of carbutamide was started, with an initial dose of 4 gm. and then 1 gm. daily for six days. Little change in the blood sugar level was seen, but the amount of sugar excreted in the urine fell to 3 gm. daily. When carbutamide therapy was stopped, excretion of sugar in the urine promptly rose, 18 gm. being excreted in 24 hours. The condition was again regulated with administration of insulin, and the patient was released, since she was to be out of the city for several weeks.

She was readmitted to the general hospital ward six weeks later because of a burn on the side of her foot. On admission, her fasting blood sugar level was 264 mg. per 100 cc. and her urine showed 4+ sugar. On an insulin dose of 55 units of isophane (NPH) insulin injection, the fasting blood sugar values were above 200 mg. per 100 cc. and glycosuria persisted. The patient was then given 4 gm. of carbutamide daily in addition to insulin; no sugar appeared in the urine. The fasting blood sugar level dropped to 80 mg. per 100 cc., and the postprandial level fell to 106 mg. per 100 cc. After 10 days, during which time administration of carbutamide had been reduced to 2 gm. daily, insulin was withdrawn. Because of increasing hyperglycemia, insulin was given in a dose of 10 units, and the blood sugar level slowly declined. After 14 days, insulin was again withdrawn, and the blood sugar level again rose.

TABLE 1.—*Effect of Carbutamide Therapy on Insulin Requirements of Eleven Patients After Hospitalization*

Patient	Age, Yr.	Weight, Lb.	Duration of Diabetes, Yr.	Av. Insulin Requirements		Dose, Gm./ Day
				Before	After	
1	66	165-168	3 wk.	45	0	1
2	54	95-97	10	10	0	2
3	52	181-184	11	60	0	1
4	46	154-152	8	50	0	1
5	56	166-167	12	25	0	1
6	63	173-176	4 wk.	(198 mg. per 100 cc.)*	(82 mg. per 100 cc.)*	1
7	56	190-190	8	55	10	1
8	53	190-200	10	50-75	20	1
9	38	220-222	9	90	40	2
10	53	154-154	3	80	80	6
11	38	107-100	8	45	45	6

* Patient, with recently diagnosed diabetes, had never received insulin. Blood sugar values are shown.

CASE 11.—A 38-year-old male, diabetic for eight years, required 40 to 50 units of insulin daily. During the past three years, he had had acidosis and had been in coma several times. The diabetes was found by radiographic evidence to be complicated by pancreatic calcification. This patient, an asthenic individual weighing 107 lb. (48.5 kg.), met all conditions that foretell failure with carbutamide therapy. Use of carbutamide subsequently resulted in failure. On admission, insulin therapy was discontinued; in three days, blood sugar values were well over 300 mg. per 100 cc. and 83 gm. of sugar was excreted in the urine every 24 hours. Carbutamide was given on a dosage schedule of 2.5 gm. the first day, 1.5 gm. the second, and 1 gm. daily for the next four days. The patient became acidotic on this dosage, and the sugar excreted in the urine increased to 126 gm. per day. At this point, the dose of carbutamide was increased to 2 gm., then 4 gm., and finally 6 gm. per day. After a total trial of 15 days on carbutamide therapy, the patient showed increasing acidosis, hyperglycemia, and glycosuria. At this point, use of carbutamide was discontinued. His condition was brought back under control with insulin therapy. When he was discharged he required the same dose (50 units) of this drug that he had before trial of carbutamide.

From the foregoing data, and from the experience in Germany, it appeared that certain factors in patients seemed to point to good prospects for success with carbutamide therapy. These were maturity, obesity, and relatively mild diabetes of short duration. With this in

mind, outpatients were selected for carbutamide treatment. Four examples of patients who have been on the drug for the longest period are discussed below briefly. In each case, the diets remained the same as before institution of carbutamide therapy.

CASE 12.—In a 65-year-old male weighing 245 lb. (111.1 kg.) diabetes was first discovered on May 11, 1955. This patient has never taken insulin, although the lowest fasting blood sugar level determined during the previous six months had been 214 mg. per 100 cc. Carbutamide was given on a dosage schedule of 2.5 gm., 1.5 gm., and then 0.5 gm. twice daily. By the next visit (one week later), his fasting blood sugar level was 143 mg. per 100 cc., and, after five weeks, his fasting level was 103 mg. per 100 cc. and the postprandial value was 115 mg. per 100 cc. The patient gained 2.5 lb. (1.15 kg.) during this period.

CASE 13.—A 68-year-old female weighing 211 lb. (95.7 kg.) had been diabetic since 1950, requiring 35 units of lente insulin for control. She had had an average fasting blood sugar level of 146 mg. per 100 cc. for the past five years. Insulin therapy was discontinued, and the fasting blood sugar levels averaged 176 mg. per 100 cc. for the next two weeks. Carbutamide was given on a dosage schedule of 2.5 gm., 1.5 gm., and 0.5 gm. twice daily thereafter. Fasting blood sugar levels on this schedule averaged 134 mg. per 100 cc. No change in weight occurred during this period.

TABLE 2.—*Effect of Carbutamide Therapy on Insulin Requirements of Seven Outpatients*

Patient	Age, Yr.	Weight, Lb.	Duration of Diabetes, Yr.	Insulin Units, Isophane Injection	Fasting Blood Sugar Level			Duration of Treatment, Wk.
					Av. Before	Av. After	Range	
12	65	245-247	¾	0	225	122	103-143	6
13 *	69	211-205	5	35	146	134	127-148	5
14	62	149-151	½	0	241	106	75-142	12
15	69	162-165	2	0	199	130	118-140	5
16	29	158-150	7	12	132	92	80-114	4
17	49	178-182	9	75	280	153	125-175	4
18 †	61	143-144	9	20	176	78	70-94	3

* Insulin discontinued for 2 wk. before carbutamide therapy; fasting blood sugar level rose to 176 mg./100 cc.
† Patient had insulin-like reaction with weakness, perspiration, and nervousness.

CASE 14.—The condition of a 62-year-old female weighing 150 lb. (68 kg.) had been diagnosed as diabetes for four months. She had never taken insulin, although her average weekly fasting blood sugar level had been 241 mg. per 100 cc., and postprandial values had been 272 mg. per 100 cc. During three months of this period, the patient had been on a 1,200 calorie diet and had lost 18 lb. (8.2 kg.). Since carbutamide therapy was first initiated, the average of 12 weekly fasting blood sugar determinations was 106 mg. per 100 cc., while her average postprandial blood sugar level was 117 mg. per 100 cc. She has regained 3 lb. (1.3 kg.).

CASE 15.—In a 69-year-old female weighing 162 lb. (73.5 kg.) diabetes had been diagnosed 24 months previously. She had never taken insulin, although her average fasting blood sugar level was 199 mg. per 100 cc. Since carbutamide therapy was started, her average fasting blood sugar level has been 130 mg. per 100 cc., and she has gained 3 lb. (1.3 kg.).

Comment

The ultimate utility of carbutamide will depend upon many factors that can be evaluated only after the passage of time and a broadened clinical experience. A few points seem clear at this time. The drug cannot be used in the emergency treatment of a diabetic with acidosis, nor has it shown a satisfactory effect in many of the young persons with unstable diabetes. It is, in this respect, not an insulin substitute. Those who seem to respond favorably to the drug in general fall into the group of those who become diabetic in maturity, are obese or overweight, and have not required an excessive dose of insulin, indicating a degree of endogenous production. Obviously, this group of patients who have a relatively mild form of the disease makes it extremely difficult to judge the drug's effectiveness, since insulin requirements can be changed markedly by such factors as weight loss or even diet restriction of only a day or so. Moreover, since the mechanism of the drug action is as yet not completely known, it must be used with caution, and particular attention must be paid to possible toxicity resulting from long-term administration.

Summary and Conclusions

A preliminary report of the clinical experience with 1-butyl-3-sulfanilylurea, designated carbutamide, has shown that this compound when taken by mouth will effectively lower the blood sugar level in many patients with mild or moderately severe diabetes. Accumulated evidence up to the present time indicates that there is a low incidence of toxic side-reactions to this drug, but a longer experience is deemed necessary to evaluate this point completely. The site of action of the drug is not yet completely delineated. Indications are that an insulin-sparing action, either through the prevention of destruction or the potentiation of insulin, may be the most likely explanation.

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VALUE OF YEARLY PHYSICAL SURVEY IN THE ADULT FEMALE

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• A program of annual examinations has been developed on the basis of five years of experience with about 5,000 patients who willingly support a plan of long-term prophylactic scrutiny in preference to episodic medical care.

The program detects a variety of constitutional illnesses but is especially concerned with cancer of the breast, genitalia, and alimentary tract. Problems of cytological laboratory tests, of costs and fees, and of regular medical care and intercurrent illnesses have been satisfactorily solved.

A number of coincidental diseases have been encountered, especially tuberculosis and diabetes. Eleven malignant tumors of the breast have been found. The detection of preinvasive uterine carcinoma is considered especially important.

With our increasing knowledge of the growth characteristics of malignant cells, a number of practical approaches to the problem of cancer detection are possible. The treatment program for the patient with an established diagnosis of cancer has not altered materially in the last decade, nor have the results of treatment improved measurably. Instead, it is constantly more apparent that the alert patient and her careful physician make an extremely formidable team for the anticipation and detection of cancer in its incipient and most successfully treated stages.

In the adult human female, cancer is found most commonly in the breast, the genital tract, and the gastrointestinal tract. These areas are easily accessible for the purpose of diagnosis. The breast may be checked periodically by the patient herself with an extremely high degree of accuracy in the discovery of abnormalities. Genital tract cancer has been shown conclusively to begin its growth in the epithelial margins. Probably even more important is the fact that in this early stage there is usually a period of slow intraepithelial development during which time the condition has all the characteristics of malignancy except invasion. At this stage cancer of the genital tract can be detected with a high degree of accuracy if the cytological methods and other diagnostic aids now available are routinely employed. Martin,[1] in a report on 137,000 vaginal smears, showed that this project detected 659 cases of preinvasive carcinoma of the cervix before gross changes were visible in the cervix. The utilization of tests for occult blood in the stool [2] has been of great value in screening gastrointestinal lesions because there is a high correlation between occult blood in the stool and potentially serious lesions before symptoms are noted by the patient. Gastrointestinal cancer usually develops in one of the ends of the tract, a fact that makes for earlier and easier diagnosis than is possible when there is midintestinal involvement.

However, patients are not interested in cancer detection alone. If such were the case, there would be statistically less reason to recommend periodic physical examination for women under 35 years of age than for those above. The doctor must not simply screen the breasts, the genital tract, and the intestinal tract and then check off his patient for the next year, for coincidental medical problems may be of as great concern as cancer, although these problems may vary with each decade. Hence, one should develop an over-all type of screening that effectively, inexpensively, and simply evaluates the woman's entire physical state. The physician will temper this evaluation with his own sympathetic interest in any additional problems that might affect the patient's emotional and mental health. Whatever haphazard or planned methods toward better health may have been utilized in the past, we are now faced with an interesting and fairly recent development. Not many years ago the life span of the average human female was only sufficient for her to get her family to adulthood. At present, though, we seem to be approaching the Biblical life span of 3 score and 10. In other words, we no longer end our lives when our young are matured. We live for some years longer, with consequent impacts upon the marriage union, national economy, and insurance annuity figures. In our current concern with the prolongation of the effective years of human life, we may find additional horizons opened.

Plan of Study

Five years ago we embarked upon a plan of routine screening of the adult female not only for cancer but for coincidental medical problems. From the first, it was evident that this had to be a voluntary service for the patients, since present types of medical insurance do not pay fees for survey of the healthy patient. This point had to be emphasized repeatedly over the years. Also, the patient had to be acquainted with the purpose of the program, its yearly expense, and its value to the patient by the physician himself; this task could not be delegated to an office employee. We first offered this program in a diffident fashion. Within a short time we found that almost all other aspects of our practice of medicine had stopped; we were doing "routine yearly physical examinations," and there was no time for anything else. This would have been a happy way to retire to office practice alone, but such was not our desire. We wished to continue with our obstetric and gynecologic surgery as well as with these yearly examinations. So, after considerable deliberation and consultation, we limited this service to patients already established in our practice and refused to accept newcomers. We mention

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this in order to show how eager the average patient is to have the physician care about her when she is well, instead of just during emergency episodes of sickness.

With this vote of confidence, the program went forward. We soon found that we did not have to send out yearly reminders to our patients. We simply suggested that they tag their yearly physical checkup with some date —their birthday, for example—and turn up at that time each year. There were just over 5,000 patients involved, with ages ranging from 20 to 55 years. They were private patients who had consulted us about specific complaints involving either gynecologic or obstetric problems or about sterility or who had come "just for a checkup." Our obstetric patients, on their final postpartum checkup, were advised of this yearly program. All surgical patients were advised to enroll in this program after they were discharged with satisfactory surgical results. The large majority of the patients so advised not only were delighted with the program but have supported it faithfully each year. Our purpose, however, was to inquire into the medical value of the program; its psychological value was obvious long before the patients returned for their yearly checkups. The patient was delighted to know what progress medicine had made and that a concrete program was available to her if she so desired.

Plan of Yearly Checkup

Careful System History.—The first step in the checkup is the taking of a careful system history, although the patient may state that she is "disgustingly healthy." Often there are changes in basic physiological patterns that are not apparent to her until she compares them on specific questioning with her habits of a year before. Any positive change in a system may require special diagnostic studies. Here, too, the careful physician may and should inquire into her emotional, marital, and mental health. These clues often are of much help. One must keep in mind the fact that surface cancer presents no signs or symptoms: by the time bleeding or pain occurs, definite cancer may be present. The physician must train himself and his patients to the concept that only by the routine evaluation of the healthy person is it possible to find preinvasive lesions. Similarly, Traut [3] warns that one would not run an antituberculosis campaign by suggesting that the patient seek professional advice at the first sign of hemoptysis. In the taking of the current history, the physician has the ideal opportunity of explaining to the patient specifically what tests will be employed to check her, their simplicity, and the lack of discomfort for her.

Physical Examination.—The physical examination entails visualization of the nasopharynx but not necessarily of the eyegrounds or of the ear drums. Percussion and auscultation of the heart and lungs are performed. The thyroid is examined for enlargement. Blood pressure is recorded. Lymphadenopathy is checked in the cervical, posterior auricular, axillary, elbow, and groin areas. Palpation of the abdomen is included, with comment upon general muscle tone. Bimanual pelvic examination is performed with visualization of the cervix. In the event of specific pathology in the pelvis or of vulvar, vaginal, or cervical lesions, specific studies are planned. The cervix that is "normal" in appearance is screened by the vaginal smear. The abnormal cervix is identified, but definitive treatment is not proposed until the report of the smear has been received. Usually we temporize with medicated douches. Treatment is prescribed when the smear result is known, unless, of course, the patient has originally presented herself with conditions such as abnormal bleeding or obvious pathology. In these cases the established techniques of differential curettage of the cervical and uterine canals are performed, as well as quadrantic biopsy of the cervix, including the lesion. In our setup this is performed most efficiently in the hospital. We have discarded such methods as punch biopsies, colposcopy, and Schiller tests for the more complete hospital study described above. The smear is often of value in diagnosing possible carcinoma early enough that radium can be used, with the result that later surgery is frequently made unnecessary.

Rectal examination is performed digitally and, coupled with the guaiac test of the stool, is in our opinion adequate for screening. If symptoms or local findings warrant further study, the patient should have proctosigmoidoscopic and/or x-ray studies. Neurological examination is not done unless system history suggests it. Many patients have been accustomed to taking a douche and a cleansing enema before an examination. While their esthetics are to be commended, this often makes it impossible to get either a good vaginal sampling or a finger specimen of the stool. Some of our friends in similar programs ask that enemas be taken routinely so that a proctoscopic examination may be included. Actually, when the physician is familar with the procedure, this proctoscopic examination can be done almost as easily as a vaginal speculum examination; however, we have done these only when indicated either by symptom or by positive guaiac test or by positive finger findings but not as a routine. Occasionally the patient who has not taken an enema before her pelvic examination must return for another pelvic examination. This happens so infrequently, however, that we have not urged the routine enema.

Laboratory Studies.—The following laboratory studies are performed: (1) complete blood study, including estimation of hemoglobin, red blood cell count, white blood cell count, and smear; (2) sedimentation rate (if this is increased, further diagnostic study is indicated); (3) complete urinalysis, including microscopic study (patients are requested to bring in specimen of first morning urine); (4) vaginal smear, as discussed above; (5) chest x-ray, done in our community at no cost to the patient; and (6) occult blood upon the stool specimen.[2] We have used the guaiac test for occult blood, for it is in the midrange of sensitivity. We nevertheless ask our patients to bring in their own specimens (after no red meat in the diet for the preceding 72 hours) rather than use the gloved finger specimen. The specimen is requested when the patient makes her appointment.

Ancillary Aids.—As an ancillary aid, breast palpation is taught to each new patient and she is advised to continue checking herself monthly throughout the rest of her life. This is equally important if she is pregnant. If she is not pregnant, it is suggested that this be done after each menstrual period, partly to aid her in remembering a regularly scheduled time, but also to avoid the confusion caused by the physiological premenstrual breast changes that frequently take place. As a substitute for some of the more complicated routines advocated we have evolved what seems a satisfactory system. The patient, lying down, uses the fingerpads of one hand to roll the opposite breast between the fingerpads and the chest wall. She completely examines each breast. The nipple is then stripped for blood. We have found that many patients discern changes in the breast several months before their professional attendants can identify them.

The physician tells the patient that this checkup constitutes the yearly evaluation but that should the patient experience unexplained pain, unexplained bleeding, or unexplained fatigue, she should report this immediately. She is advised of any new child-spacing information or medical fact in which we feel she would be interested. The large majority of serious constitutional afflictions are covered by the physical survey described. Traumatic problems, acute infectious processes, and certain psychosomatic problems are obviously not covered. The alert physician will find many of the latter, however, as he treats his patients over the years.

Cost and Personnel

The problem of personnel is the major one in this routine evaluation plan. While plans are under way in our community for a central cytology laboratory, none is available at the moment. The only specialized study is that of the Papanicolaou smear: all of the other laboratory studies can be done by a qualified medical technician or by the doctor himself. We tried many solutions to this problem, and finally we began interpreting our own smears after careful briefing by a local pathologist and careful study of the several color atlases of cytology that are available.[4] This was excellent training for us, since we could easily correlate the patient's symptoms and physical findings with the smear. If we were in doubt, we had the pathologist aid in interpretation. Any suspicious smear automatically was rechecked and, if still suspicious, was followed by differential curettage and biopsies. This process is time-consuming for the physician; however, after the preliminary learning stage, the time required is offset by the mental peace derived from such a "negative" study. After several years of doing our own cell studies, we were fortunate enough to secure a cytologist trained by Papanicolaou's laboratory. Currently, there are a number of laboratories in which any able and ambitious medical technician can be instructed, and the services of such technicians, when reinforced by a consulting pathologist and by the physician, would seem to us to be satisfactory until a community laboratory is established. A number of these cytological laboratories are already functioning satisfactorily in Hawaii, San Diego,[1] Boston, New York, and other centers. These encompass the entire field of exfoliative cytology and not vaginal cytology alone.

We find that our routine evaluation plan is self-financing. There is a blanket cost of $25 for the outlined physical examination and laboratory studies, including vaginal smear and instruction in breast palpation. The patients have accepted this most willingly, for it represents average current fees in our community for laboratory services as well as for office examination. We must explain to each patient that this fee is rarely if ever covered by her health insurance program but that it is an elective and voluntary fee paid by her. We emphasize the fact that this fee is but a fraction of the cost of the older, more formal types of study, not only in terms of money but also in terms of time spent by both the patient and her physician. We also point out the slight cost of a checkup when compared to the cost of corrective work.

The technical problems of gathering vaginal smears have been described meticulously by pioneer writers in this field such as Papanicolaou,[4a] Traut,[3] and Ayre.[4b] A careful bibliography is appended to these writings. Other laboratory methods employed in this study have been standard. We have often considered adding certain routine laboratory tests for other metabolic surveys but have felt that this was unwarranted expense unless the history or physical findings indicated that such studies were in order. Criticism may be raised that even the screening of vaginal smears results in the expenditure of a vast amount of time, effort, and money, considering the results. Positive Papanicolaou smears are reported by many observers to turn up in only 0.5 to 1.0% of cases screened. However, the reaction of the patient is that her peace of mind is worth the time and effort—if her physician is willing to spend them. In view of Martin's [1] report of 659 patients with preinvasive carcinoma of the cervix in visually "normal" cervices found in 137,000 patients screened, this would seem a most worthwhile procedure.

Results

Breast Pathology.—The large majority of breast masses reported by the patients had to do with physiological mastitis that yields to proper breast support and to hormone and vitamin therapy. Next most common were benign tumors that were proved by biopsy and given proper local treatment. Less than 5% of the breast lesions surveyed were malignant, some 11 in all. Two of these patients have died. In each case malignant lesions were found in the axillary glands at the time of surgery. Our study has been in process for too short a period for adequate statistical evaluation either in number of patients or time elapsed since definitive treatment. However, according to the current statistics on permanent cure of cancer of the breast, the earlier the adequate scrutiny of any breast lesion, the better the outlook for the patient. We have commented upon the ability of some of our patients to locate areas of variation from the norm in their own breasts, often antedating our ability to identify them by some weeks.

Uterine Carcinoma.—Our results are most impressive in the detection of uterine carcinoma, for it is easier to make an adequate preoperative diagnosis in the case of uterine lesions than it is in problems concerning the breast. We have repeatedly pointed out to the patient that abnormal bleeding is of great significance but that the cell variations detectable before such bleeding occurs are of even greater value. In our opinion, the greatest hope for the future lies in the detection of preinvasive malignancy. Our series of over 5,000 vaginal smears has given us figures comparable to those reported in detail elsewhere; we have found about 0.5% of smears positive in cervices with no visible pathology. We have had only one case of preinvasive cancer. Presumably, this latter type will increase as the age of our patients increases, since these lesions appear in greatest number after the age of 35. Multiparity has just begun to appear in many of our patients, and that this is a factor in the development of cervical cancer is well documented, just as suckling has been established as a causative agent in breast cancer.

Adnexal Pathology.—Adnexal pathology has always been a problem in any obstetric-gynecologic practice dealing with comparable age groups. The large majority of these cases have been ovarian cysts of the simple retention type, conservatively treated. Next most common has been endometriosis. We have had three cases of pelvic tuberculosis diagnosed because of adnexal problems; these are now yielding to medical rather than to surgical treatment.

Ovarian Deficiency.—Ovarian deficiency frequently is found on routine evaluation of the vaginal cytology. In our experience, the picture of poor maintenance of the vaginal epithelium is most commonly encountered with subclinical hypothyroidism or in the patient above the age of 35. In the former case, treatment with adequate amounts of thyroid often is most gratifying. If the latter type of patient is taught to look for the symptoms of ovarian deficiency, and if such symptoms are thereby discovered and treated, her metabolism can be greatly improved.

Vaginal Pathology.—Except for a few unsuspected Gaertner's duct cysts, vaginal pathology is but a small problem in this age group. The clinical appearance of atrophic vaginitis in the older patients is more frequent. Questioning the older patients about related symptoms will often elicit troubles that they had felt were too embarrassing or too minor to mention but for which they are most appreciative of solution and consideration.

Other Coincidental Diseases.—As would be expected in a group of patients in this age group, a number of coincidental illnesses occurred during this five-year period. The two most serious problems encountered were pulmonary tuberculosis, found in five cases, and diabetes mellitus, found in three cases. In general, this program is of less value in the discovery and treatment of acute diseases than it is in the handling of malignant or chronic diseases. However, it does much to reestablish the patient's faith in the concept of the family doctor. In other words, while we are specialists in obstetrics and gynecology, the patient nevertheless has a central agency through which proper care can be found for her broken bones, her early pneumonia, or her domestic crisis. This sense of security has been commented upon by the patients so often that it apparently is, in their estimation, of major importance.

Summary

Over a five-year period we have attempted to give careful and economical screening, largely for cancer of the breast, genital tract, and intestinal tract, to a group of 5,000 patients. This program is designed either for the individual physician or for a group in private practice. Results to date suggest that this program is of value for several reasons. By careful screening, preinvasive or early cancer can best be detected at the time most favorable for treatment and/or cure. This program screens for many constitutional illnesses as well, although not for those of an acute or traumatic nature. It also points out to the patient the desire on the part of her physician not only to cure her when she is ill but to anticipate and to try to prevent problems throughout her entire lifetime. Episodic medical care is no longer adequate, in our opinion, and should be replaced by long-term prophylactic scrutiny. This is becoming more possible each year, and the cost of the use of improved methods will be willingly supported by the patient whose physician has carefully explained to her the goals and advantages of such a program.

707 Broadway (22) (Dr. Rutherford).

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Myleran for Leukemia.—The clinical and hematologic effects of 1,4-bis (methylsulfonoxy) butane (Myleran) were studied in 24 patients with chronic granulocytic leukemia who were treated for periods ranging from 1 to 13 months. Leucocyte counts were reduced to normal levels initially in all the patients. The degree of peripheral immaturity paralleled the changes in the white cell count. Relative disproportion in the percentage of these elements occurs during active white cell count reduction, owing to the difference in the rate of reduction. All stages of granulopoiesis in the peripheral blood are decreased with Myleran therapy. Improvement in subjective symptoms, anemia, and hepatosplenomegaly were prominent features. Amenorrhea occurring in four young women was associated with endometrial atrophy. Five patients died during therapy from the complications of chronic granulocytic leukemia. One patient receiving unsupervised therapy died from a drug-induced hemopoietic aplasia. . . . Myleran appears to be an effective agent in producing temporary remission in chronic granulocytic leukemia. Its effectiveness varies with the patient treated. It has some advantage over existing forms of therapy, including ease of administration, absence of cumulative effect and side-effects, and close control of response. Results with Myleran therapy appear similar to those obtained from x-ray. The effect of Myleran on the life expectancy of the patient with chronic granulocytic leukemia is not yet known.—John Louis, M.D., L. R. Limarzi, M.D., and W. R. Best, M.D., Treatment of Chronic Granulocytic Leukemia with Myleran, *A. M. A. Archives of Internal Medicine*, March, 1956.

EFFECT OF MOLAR SODIUM LACTATE IN INCREASING CARDIAC RHYTHMICITY

CLINICAL AND EXPERIMENTAL STUDY OF ITS USE IN THE TREATMENT OF PATIENTS WITH SLOW HEART RATES, STOKES-ADAMS SYNDROME, AND EPISODES OF CARDIAC ARREST

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• ***Sodium lactate, in concentrations of one mol per liter of water, can be given by intravenous infusion or by intracardiac injection without toxic effects. In sinus bradycardia a significant acceleration of heart rate follows, and in complete auriculoventricular block and ventricular standstill the effects have in some instances been lifesaving.***

The action of molar sodium lactate has been studied in 46 human subjects, including 5 healthy volunteers. In the latter, 100 to 200 cc. produced a slight alkalosis lasting one or two hours. During that time the lactate is metabolized, probably being used directly as fuel by the myocardium. It did not raise the blood pressure above normal in any case.

It was effective in restoring the heartbeat when given within two minutes after terminal cardiac arrest. Intracardiac injection succeeded in one instance after intravenous injection had failed, and in another instance the lactate was effective after epinephrine and phenylephrine had been ineffective.

Recent studies in our laboratory have shown that molar sodium lactate manifests a marked effect in increasing the heart rate in sinus bradycardia, complete auriculoventricular heart block, and ventricular standstill. The drugs available for increasing the ventricular rate under these conditions consist chiefly of sympathomimetic [1] and vagolytic drugs.[2] These are not always effective and their use not infrequently results in the production of dangerous ectopic rhythms. The effect of molar sodium lactate appears to be based on a principle that, as far as we know, has not previously been employed in the intact animal or the human subject.

Material and Methods

The effect of molar sodium lactate was studied in 46 human subjects (see table). The infusion was given intravenously to all these patients except for 7 of 12 patients with terminal cardiac arrest to whom it was given by intracardiac injection. After clinical examination, control electrocardiagrams were taken, blood pH values determined, and the following electrolyte and blood chemistry determinations were made: serum sodium, potassium, calcium, chloride, lactic acid, and carbon dioxide–combining power. These studies were repeated at frequent intervals during the administration of the molar sodium lactate and for periods up to two hours after its cessation. Experimental studies were also performed in normal dogs and in dogs in which complete auriculoventricular heart block and cardiac arrest were produced by various anesthetic agents and as a result of obstructive asphyxia.

The doses used varied considerably depending upon the type of case studied and the patient's response. Normal patients were given a dose of 100 to 250 cc. of the solution over a period of 10 to 20 minutes. Patients with myocardial damage; e. g., sinus bradycardia or partial or complete auriculoventricular heart block, were given 100 to 160 cc. of the solution within 10 to 15 minutes. During periods of cardiac arrest, the doses varied from 17 cc. administered in about 30 seconds to 500 cc. given over a period of four to five hours. In one patient, 900 cc. was given over a period of six hours.

Results

Sinus Bradycardia.—Three patients with sinus bradycardia (with control ventricular rates of 30 to 40 contractions per minute) showed increases in ventricular rates that ranged from 50 to 75% above the control levels (fig. 1). In one of these, nodal escape present in the control tracing was abolished with speeding of the rate.

Partial Auriculoventricular Heart Block.—The molar sodium lactate was given to six patients with partial auriculoventricular heart block; sinus rhythm was present in five and auricular fibrillation in one. In five patients, the ventricular rates rose from 32 to 45, 35 to 49, 38 to 50, 44 to 88, and 50 to 80 contractions per minute (fig. 2). In one patient with simple PR prolongation and a normal heart rate (88 per minute), there was no significant change in the ventricular rate.

Summary of Cases Studied

Normal subjects	5
Myocardial abnormality with normal sinus rhythm	4
Sinus bradycardia	3
Partial auriculoventricular heart block	6
Complete auriculoventricular heart block	12
Cardiac arrest	
Stokes-Adams syndrome	4
Terminal	12
Total	46

Complete Auriculoventricular Heart Block.—Molar sodium lactate was administered to 12 patients with complete auriculoventricular heart block. In four cases,

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The sodium lactate (sodium *r*-lactate solution, one molar, ampuls) used in this study was supplied by Eli Lilly & Company, Indianapolis.

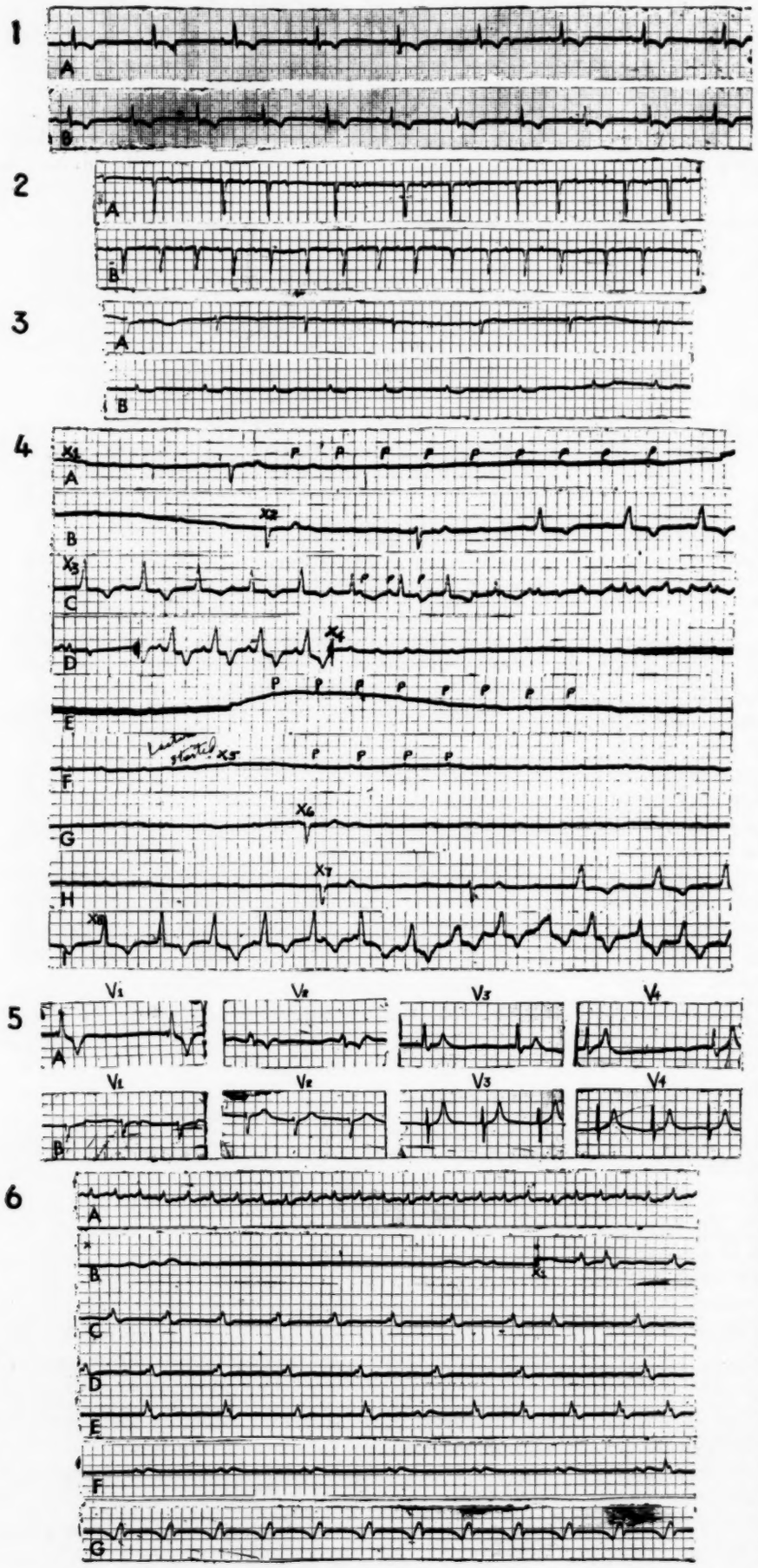

Fig. 1.—*A*, control tracing (lead 2) shows sinus bradycardia with a rate of 43 beats per minute. The PR interval is 0.20 second. *B*, immediately after 160 cc. of molar sodium lactate was given over a period of 15 minutes, the PR interval became slightly more prolonged (0.24 second) with the faster rate.

Fig. 2.—Electrocardiographic tracing of an 81-year-old man with a diagnosis of arteriosclerotic heart disease with partial auriculoventricular heart block, the result of digitalis intoxication. *A*, control tracing (lead V_1) showing periods of 2:1 auriculoventricular heart block with cycles of 1:1 response. The ventricular rate averaged 50 per minute. *B*, immediately after 100 cc. of molar sodium lactate was intravenously administered in 20 minutes, the ventricular rate increased to about 80 per minute. Note that, for the most part, there was 1:1 auriculoventricular conduction with PR prolongation; only one cycle of 2:1 auriculoventricular conduction was recorded in this strip.

Fig. 3.—*A*, control tracing (lead 2) showing complete auriculoventricular heart block with auricular fibrillation; the ventricular rate was 32 per minute. *B*, immediately after administration of 100 cc. of molar sodium lactate in 15 minutes, the ventricular rate increased to 45 per minute.

Fig. 4.—Electrocardiographic tracings of a patient, aged 71, with complete auriculoventricular heart block, who experienced numerous Stokes-Adams attacks. *A*, molar sodium lactate administration started at X1 (200 drops per minute) after asystole and Stokes-Adams attack. A solitary idioventricular beat was present. The auricular rate was 75 per minute. *B*, at X2, note the return of idioventricular beating, which increased in strip *C* to a rate of 65 per minute. The auricular rate increased to 115 per minute. *D*, at X4, administration of the molar sodium lactate was stopped, and, within 30 seconds to one minute (when the machine was started), ventricular standstill was again recorded. *E*, note prolonged ventricular standstill. The auricular rate slowed to about 75 per minute. *F*, at X5, the intravenous administration of molar sodium lactate was started. Only auricular activity was present. *G*, at X6, a single ventricular beat was recorded. *H*, at X7, there was restoration of ventricular beating, the rate of which speeds up in strip I to about 75 per minute. The auricular rate increased to 100 per minute.

Fig. 5.—Postoperative electrocardiographic tracings of a 58-year-old patient with hyperpotassemia, emphysema, and arteriosclerotic heart disease. *A*, control precordial leads showed a slow ventricular rate (30 per minute) and widened QRS complexes measuring 0.18 second. Recording from a patient with hyperpotassemia (potassium—7.8 mEq. per liter) before treatment. *B*, four hours and 30 minutes after *A* (potassium—6.0 mEq. per liter). Note the increase in the ventricular rate (approximately 60 per minute) and narrowing of the QRS complexes to 0.09 second. Recording after continuous treatment with 740 cc. of molar sodium lactate.

Fig. 6.—Effect of molar sodium lactate in terminal cardiac arrest. Patient, aged 45, was in a state of shock due to an extensive myocardial infarction. *A*, lead 2, taken one hour before death, showed a sinus tachycardia with a ventricular rate of 125 per minute. Note the notching of the QRS complexes. There was moderate S-T segment depression followed by a low-amplitude T-wave. *B*, one hour later (lead 2) cardiac standstill occurred at X. No respiratory movements were present, and no form of artificial respiration was administered. At X1, 40 cc. of molar sodium lactate was injected into the heart. This was followed immediately by restoration of cardiac beating. (Strips *B* through *E* represent a continuous tracing.) *C*, note speeding of the ventricular rate and increased widening of the QRS complexes. *D*, the ventricular rate decreased slightly, and there was further alteration of the QRS complexes. *E*, toward the end of this strip, the ventricular rate increased to about 60 per minute and continued at approximately this rate for five to seven minutes. *F*, 10 minutes after *E*. There was increased aberration of the QRS complexes, and the rate slowed to 35 per minute. *G*, four minutes after *F*. The rate increased to 60 per minute after a second injection of 40 cc. of molar sodium lactate into the heart, but the QRS complexes were now very bizarre.

the ventricular rate was increased from 71 to 107, 40 to 50, 42 to 47, and 32 to 45 per minute (fig. 3). The auricular rate was comparably increased. In three patients with hyperpotassemia, the ventricular rates increased from 15 to 100, 28 to 71, and 30 to 52 per minute. In three subjects with auricular fibrillation, the ventricular rates increased from 32 to 38, 39 to 48, and 45 to 52 per minute. In two patients, there was no significant increase in the auricular or ventricular rates.

Effect on Blood Pressure.—In normal subjects, the intravenous administration of 100 to 200 cc. of the molar sodium lactate over a period of 10 minutes manifested no demonstrable effect on blood pressure. Comparable doses (60 cc.) given to dogs over a period of five minutes also had no effect on the blood pressure. When these amounts were infused rapidly in the dog (25 cc. in one minute), the blood pressure tended to fall.[3] In patients with partial or complete auriculoventricular heart block, no significant change in blood pressure was noted. However, in patients in whom a slow heart rate was accompanied by a state of shock, the blood pressure tended to return to a normal level as the ventricular rate speeded.[4] Similar effects on the blood pressure were also observed with three patients during resuscitation during Stokes-Adams seizures and in two patients with terminal cardiac arrest.

Stokes-Adams Seizures.—Molar sodium lactate was given to four patients with Stokes-Adams attacks. In the first patient, the molar sodium lactate was administered during 10 episodes of cardiac arrest and restored the heartbeat on each occasion (fig. 4). After treatment for two hours in this manner, the heart continued to beat spontaneously for two hours. The patient required an additional dose of molar sodium lactate after another episode and thereafter remained free of attacks for four or more hours. He died during the last episode while the house officer was away treating another patient. Molar lactate given to two other patients with Stokes-Adams seizures occurring in association with complete auriculoventricular heart block resulted in restoration of cardiac beating. The dose in one patient was 80 cc. given intravenously by syringe within a period of several minutes; in another case, repeated injections of 40 to 60 cc. of molar sodium lactate consistently restored ventricular beating in each of many episodes. In the fourth patient, the period of asystole had lasted over six minutes, and, although ventricular beating was restored, the patient did not recover.

It is our impression that molar sodium lactate is a powerful and valuable agent for the treatment of Stokes-Adams attacks. Although the number of cases treated is relatively small, our experience thus far suggests the following regimen. The molar sodium lactate should be administered as soon after the attack as possible, preferably within one or two minutes. Recovery is less likely to occur after longer periods of standstill. During the attack, the molar lactate should be given intravenously by syringe in doses of 20 to 80 cc. within a period of one-half to two minutes. Thereafter, an intravenous drip should be started so that the speed and amount infused can be better controlled. A patient who has had repeated and frequent episodes should be observed closely by the physician, with continuous electrocardiographic control. Continuous administration of the molar sodium lactate by drip for 6 to 12 hours, at a rate of 15 to 20 drops per minute, may suffice to prevent subsequent seizures; if they tend to recur, the rate of infusion may be speeded. Other methods of resuscitation, including artificial respiration and oxygen, should be utilized in the presence of repeated seizures to prevent cerebral anoxia. At the present time, we are investigating the use of orally administered molar sodium lactate as maintenance therapy to prevent recurrent Stokes-Adams attacks.

Terminal Cardiac Arrest.—Molar sodium lactate was administered to 12 patients with terminal cardiac arrest. These included patients on the medical and surgical wards who were observed in the terminal phase of their illnesses; the underlying diseases were carcinoma, cerebrovascular accidents, acute myocardial infarction, and uremia. Electrocardiograms were made in some of these cases prior to death, and evidence of a slow idioventricular rhythm or cardiac standstill was observed for varying periods prior to the injection of molar sodium lactate (fig. 5). In others, the infusion was given at varying intervals up to five minutes after cardiac standstill had occurred and the initial electrocardiogram was taken after cardiac arrest had occurred. The intravenous injection of 17 to 100 cc. administered in one-half to two minutes usually sufficed to restore cardiac beating (fig. 6). Occasionally, doses up to 250 cc. were administered in periods of 5 to 10 minutes, depending upon the duration of the terminal phase and manifestations of the lactate effect.

Six patients received the infusion intravenously, and seven were given an intracardiac injection. The heartbeat was restored in one of these by intracardiac injection after intravenous infusion had failed. Intracardiac injection was given to patients with less favorable conditions in whom the heartbeat had ceased for a period of two to five minutes. Generally, when the injection was given one-half to two minutes after cardiac arrest, the heartbeat was usually restored, and, in two cases, the previously unobtainable blood pressure readings could be registered. Best results were obtained, however, when the lactate was injected during the critical period after cardiac arrest. This period varies in different patients but lasts approximately two minutes. When a period longer than two minutes intervened, the electrocardiogram prior to injection of sodium lactate usually showed widened aberrant ventricular complexes. Although ventricular activity was usually restored and the idioventricular pacemaker, when present, was accelerated, the QRS complexes remained generally unchanged and there was no effect on blood pressure.

In two of these patients with terminal cardiac arrest, the administration of the sodium lactate resulted in the restoration of the heartbeat and the blood pressure. In one of these, the heart appeared as if it could beat indefinitely as long as artificial respiration was maintained. In the second case, after epinephrine and phenylephrine hydrochloride injection had failed to restore the heartbeat, molar sodium lactate was efficacious in restoring

the heartbeat and in maintaining the blood pressure for a period of nine hours.

Toxic and Untoward Effects.—Molar sodium lactate has relatively few toxic effects when given in the doses and manner described above, the effects mainly being the occurrence of extrasystoles and pulmonary edema.

Extrasystoles: Of the 46 total cases studied to date, in which this solution was often administered in very large doses, ventricular extrasystoles were produced in only four cases. These appeared in the form of isolated premature beats or coupling. In two additional cases, the ventricular extrasystoles, occurring in pairs in the control tracing, increased in frequency, with periods of sequences of three extrasystoles. These added beats disappeared when the sodium lactate infusion was stopped. Their duration was extremely brief, lasting a few seconds or a minute at most, and occurred at the height of the lactate effect. These episodes were observed in patients with severely diseased hearts and in association with congestive heart failure. No instances of paroxysmal tachycardia were noted.

The remainder (42) of our entire group of patients, many of whom also manifested severe grades of myocardial damage, who received similar and larger amounts and were observed for from one to five hours, failed to show extrasystoles. This is of considerable importance in comparison to the effect of epinephrine and other sympathomimetic drugs that manifest a marked tendency to produce extrasystoles and other serious ventricular arrhythmias.

It is of interest that we have been unable to produce extrasystoles in normal subjects and in normal dogs to whom large doses were administered. Compared with epinephrine, this solution shows a markedly diminished tendency to produce ectopic rhythms and is apparently much safer.

The mechanism of the production of extrasystoles may be (1) a sudden increase in cardiac work due to the lactate ion in a patient with a damaged heart; (2) the production of alkalosis, which tends to increase cardiac irritability; and (3), a possible additional factor in the presence of toxic effects of digitalis, the sudden alteration of potassium in the heart muscle, which may already be somewhat depleted of this electrolyte.

Pulmonary Edema: Although molar sodium lactate was given fairly rapidly in large doses to patients with diseased hearts and occasionally to patients with congestive heart failure, no instance of pulmonary congestion was observed after its use in the first 46 patients. Recently, molar sodium lactate was administered to a patient, aged 84 years, with arteriosclerotic heart disease and sinus bradycardia who had been subject to episodes of pulmonary edema. After the infusion of 150 cc. in 20 minutes, a slight degree of pulmonary congestion developed, which disappeared within 10 minutes after cessation of the infusion.

Comment

Electrolyte Alterations and the Fate of Sodium Lactate.—When given in the doses and at the time intervals mentioned above, the sodium *r*-lactate is completely metabolized in a period of from one to two hours by normal subjects. A portion of the lactate radical is oxidized and the remainder converted into glycogen. In our cases, after the administration of 140 to 200 cc. of molar sodium lactate within a period of 10 to 15 minutes, the concentration increased from 12 to 50 mg. per 100 cc. about 15 minutes after the infusion was begun and gradually returned to the control level within about 90 minutes.[5] Abramson and Eggleton (1927)[6] pointed out that the injected lactate acts like an easily oxidizable substrate that replaces other foodstuffs in metabolism.

The sodium ion, liberated through the oxidation of lactate or the conversion into glycogen, is transported to the kidney for excretion, largely as a bicarbonate salt. There exists, therefore, a state of alkalosis of the base bicarbonate type for several hours after the infusion, with commensurate increase in the blood pH. Within two to three hours, more than half of the injected sodium is excreted.

Significant alkalosis is produced when large doses are used. With 100 to 200 cc. the alkalosis is slight and transitory, lasting only one to two hours, and results in no deleterious effects. We have given 900 cc. of the half-molar solution in a period of four to six hours to a patient aged 65 with arteriosclerotic heart disease and a normal heart rate. No significant clinical manifestations were noted except for slight S-T segment depression and QT prolongation; no other electrocardiographic effects were observed. To three other patients with very slow heart rates, aged 59, 67, and 71, we have given doses ranging between 400 and 1,200 cc. of molar sodium lactate within a period of two to six hours without any clinical or electrocardiographic evidence of undesirable side-effects.

Mechanism of Cardiac Effects.—The possible mechanism of the cardiac effect was discussed in some detail in a previous communication.[4] The exact mode of its effect has not been clearly established, and investigations are in progress in an attempt to solve this problem. It is felt that the results observed are probably not due to vagolytic effects. Sympathomimetic effects do not adequately explain the phenomena observed. The increase in the serum sodium concentration, which increases the excitability of the cell, has been mentioned as a possible explanation for the acceleration of the heart rate. It is our impression, however, that the sodium ion per se is a minor factor in speeding the heart rate. This belief is based upon the fact that the increase in the serum sodium level is relatively small with the doses of sodium lactate administered. In addition, it takes some time for this increase to occur, and we have observed instances of increased serum sodium level without demonstrable evidence of increased excitability or irritability. Our impression at this time is that the effects observed can best be explained by the production of alkalosis plus the effect of the lactate.

There is considerable evidence that a state of alkalosis tends to accelerate conduction and to increase the irritability of the heart muscle. Ringer (1882),[7] working with the isolated perfused heart, observed that when a

ventricle had lost its contractility while beating in Ringer's solution, its contractility could be restored by the addition of sodium bicarbonate. Mines (1912),[8] working on the isolated terrapin and mammalian heart, observed that, with a higher pH, there results a more rapid initiation of the excitatory process, acceleration of the rhythm, and an increase in conductivity in the heart muscle. Andrus and Carter (1924)[9] studied the effect of variation in pH of the perfusion fluid upon the terrapin heart. They concluded that the rate at which excitation was transmitted in auricular muscle was dependent upon the hydrogen ion concentration of the perfusate; it was increased by a more alkaline pH and decreased by a more acid pH.

The administration of sodium lactate is accompanied by relatively rapid alteration in the blood pH. This probably occurs earlier in the region of the heart, even before it is reflected in the peripheral blood. As a result, any local changes characterized by acidosis in the heart would tend to become less marked. Since anoxic states are frequently accompanied by acidosis, these local changes in the heart would tend to speed up the rate even before the systemic acidosis has been significantly altered. That alkalosis is an important factor, of itself, is indicated not only by the experiments performed in the isolated heart but also by the fact that changes of a similar type were obtained by the use of sodium bicarbonate during the complete heart block produced by obstructive asphyxia in dogs.[3]

The lactate itself is apparently an important factor in the production of the cardiac effect. It is relatively rapidly utilized as a fuel by the heart. There is some evidence that the heart muscle can utilize lactate for direct provision of energy.[10] The lactate may act directly as added substrate to the Krebs cycle and may be converted to pyruvate via the coenzyme diphosphopyridine nucleotide, circumventing the intermediate steps in conversion of glucose to pyruvate. This may, in effect serve to act directly in the oxidative metabolic mill of the Krebs cycle and to utilize and conserve the energy of the cell more efficiently.

Indications.—The indications for the use of molar sodium lactate have not been finally determined. Preliminary investigations would suggest that it may be used in any condition in which it is desirable to increase cardiac rhythmicity. Because the effect of parenteral administration is relatively transient (one to three hours), its use is limited to patients with extremely slow heart rates during impending and actual cardiac arrest, as is observed in Stokes-Adams seizures and cardiac arrest due to other factors. It is particularly indicated in the treatment of slow heart rates associated with hyperpotassemia.[11] Initial studies suggest that oral medication may be efficacious in maintaining a more prolonged effect.

This preparation is relatively well tolerated and is accompanied by a paucity of side-effects. These consist, particularly, of the transient production of extrasystoles or an increase in those ectopic beats previously present. Such effects have been observed in the presence of advanced heart disease, especially when associated with congestive heart failure. In this group, sodium lactate should be given cautiously and slowly, under continuous electrocardiographic control. Upon cessation of the infusion, the extrasystoles may promptly disappear.

Summary

The effects of molar sodium lactate were studied in patients with slow heart rates of various etiologies, including sinus bradycardia and partial and complete auriculoventricular heart block, and in patients with Stokes-Adams syndrome and cardiac arrest. The cardiovascular effects were investigated in patients with normal hearts as well as those with various cardiac abnormalities. A total of 46 patients was studied. The effect of the infusion of molar sodium lactate was correlated with electrocardiographic observations and studies of blood pH, serum electrolytes, blood chemistry, and alterations in the patient's clinical state. Studies were also performed in the normal dog and in dogs in which complete auriculoventricular heart block and cardiac arrest were produced by various anesthetic agents and as a result of obstructive asphyxia.

Molar sodium lactate appears to exercise a marked effect in increasing cardiac rhythmicity while possessing little or no pressor action. It increases significantly the ventricular and auricular rate in patients with slow heart rates due to sinus bradycardia or partial or complete auriculoventricular heart block. In patients in whom the slow heart rate was accompanied by a state of shock, the increased heart rate was accompanied by an increase in blood pressure and improvement in the clinical state. In eight of the subjects in whom the QRS complexes were widened, conspicuous narrowing occurred.

This infusion was given to three subjects who had Stokes-Adams attacks. Cardiac beating was restored 10 times in one case and on many occasions in the other 2 cases. In two of these, molar lactate restored cardiac beating after epinephrine and phenylephrine hydrochloride injection had failed to manifest an effect. Two of these patients are alive at the time of this writing, about six weeks after treatment.

In 12 patients with terminal cardiac arrest, administration of molar sodium lactate brought conspicuous improvement in most of the subjects, as demonstrated in the electrocardiograms. The extent of its effect was related to its administration within the critical period after the occurrence of cardiac arrest. If administered within 30 seconds to two minutes, the abnormal features of the electrocardiogram will tend to return to a more normal configuration, and, in addition to an increase in heart rate, the blood pressure will tend to rise. In one such case, the heartbeat appeared to be maintained indefinitely, and, in another, it was maintained for about nine hours after injection of molar sodium lactate. Molar sodium lactate is relatively well tolerated, even in patients with severe heart damage. The most important untoward effect observed was the transient production of extrasystoles or an increase in those previously observed.

Addendum

Since the time of writing this report, the patients in three cases of cardiac arrest, occurring in the operating room during various types of surgery, have been successfully resuscitated by us with the administration of molar sodium lactate.

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FILLING THE GAP BETWEEN ACADEMIC MEDICINE AND MEDICAL PRACTICE

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• *The attitudes of the teacher and of the practitioner of medicine diverge inevitably despite their dedication to a common cause. There tends to be a dichotomy between those whose chief devotion and occupation is the teaching of medicine and those whose chief devotion and occupation is the cure and treatment of individual patients. Although the dichotomy is frequently not complete and absolute, there is an essential difference in the type of occupation and a resultant difference in interests.*

The differences have been exaggerated by certain aspects of the whole-time system. This represents a form of intellectual inbreeding that is wholly undesirable. It entails financial relations between doctors and institutions that are a source of divisive emotions. Those few medical schools and university hospitals that employ no part-time teachers or staff should abandon this system. University hospitals should abandon the intern year and should advise recent graduates to have the experience of a year in nonuniversity hospitals. Medical schools and university hospitals should give a warmer welcome and a more nearly equal status to their part-time teachers. Measures of this sort can bring the academic group and the practicing profession into much closer and happier relations.

I am glad for the opportunity to discuss filling the gap between academic medicine and medical practice, because I believe such a gap does exist and that it is serious. It is perhaps natural that there should be a gap. Academic teachers are busy with the scientific aspects of medicine, with the study of large groups of cases and of rare and poorly understood diseases, with experiments, with the application of the preclinical and basic sciences to the understanding and treatment of disease, with the teaching of all these things to students, and with many administrative duties. Emphasis is upon medicine as a biological discipline applied to a particular animal species, Homo sapiens. These men are also in charge of the patients in the university hospitals; but these are not their own personal patients. They are patients of the institution. Such patients are treated excellently from a scientific aspect of disease, but often it is inevitable that the human relations are somewhat perfunctory. There may be little interest in the patient as a personality and little attention paid to individual characteristics or to background and to environmental influences. In scientific terms, it is species study of a narrow sort, with insufficient attention paid to the ecology of individual specimens.

On the other hand, the practicing physician is also a very busy man, but busy from another aspect of medicine. He is largely concerned, not with the generalities of disease nor with a broad survey of the fields of scientific advance to discover new and useful applications to the problems of medicine, but with the specific needs and problems of many individuals, each of whom is a personal responsibility, many of whom are friends, and all of whom claim his immediate and concentrated interest and attention. In these days, as a general rule, he is driven all day and often at night by a succession of highly personal demands upon his time and thought.

Although there are many teachers in the schools who still retain their interest and sense of responsibility in the care of individual patients and although there are busy practitioners who still are alert and eager in following the scientific development of medicine and even in contributing substantially to it, the picture of the diverging interests of the two groups as just drawn is generally true. It is not surprising that there should be a gap between these two necessary components of the medical

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profession, but it is well worthwhile examining how the gap manifests itself in mutual attitudes, what factors have produced and exaggerated it, and what may be done to improve the situation.

Divergent Attitudes of Teacher and Practitioner

Both the teacher and the practitioner are deeply devoted to medicine, but to different phases of the profession. It is somewhat like the situation in the Army. Both the field commander and the staff officer are loyal servants of the Army, but the field commander speaks of the staff man as a desk soldier who fights with ink the battle of the Pentagon, while the staff officer regards the field commander as good enough to slog around in the mud bossing soldiers but lacking the mental equipment for the higher levels of his calling. In medicine, the teacher often seems to take an attitude of superiority and looks patronizingly down on the lowbrow pill peddler. I remember the attitude of one of my instructors in anatomy who later went on to a distinguished scientific career that had little or no bearing on practical medical service. This doctor had served one year as a medical intern before entering the field of scientific teaching and research. Her view of the practice of medicine may be grasped by the quotation: "The doctor gives the patient some sort of treatment and if he recovers the doctor thinks it is a result of his treatment. Actually it usually happens quite regardless of the treatment and often in spite of it. When the patient dies, the pathologist shows at autopsy how often the doctor was mistaken in his diagnosis and treatment of the case."

In not a few cases the teacher also regards the practitioner as a moneygrubber lacking in idealism, who is more intent upon developing a lucrative practice than in furthering the knowledge of disease and improving the general community health. On the other hand, the practitioner looks down patronizingly on the teacher as the dweller in an ivory tower, seeking a pleasant intellectual life remote from the pressures and problems of daily medical service, with which he is constitutionally unfit to cope successfully. This is a reflection of the old maxim: those who can, do; those who cannot, teach. A surgeon of my acquaintance, who himself had been a teacher for a time and who became a nationally and internationally famous surgeon, said to me, "A teacher is so used to talking down to the untrained minds of young students that he develops a quite unjustified Jehovah complex. Most of the full-time teachers of surgery have not had one-quarter of the experience I have had, nor contributed nearly as much to surgical progress, but they regard their opinions as more important than mine because of their academic status."

Functions and Needs of Modern School

Here it may be appropriate to ask whether either of these groups takes sufficient time to think out the real purpose of the medical school. The direct answer, of course, is that the medical school exists to train physicians to serve the health needs of the people. But this obvious answer is too simple and too limited. To train doctors in the fullest sense means something more than pouring facts into heads. It means training to think of basic problems, to realize the present limits of knowledge, and to understand efforts and methods to expand these limits. It calls for teachers and teaching of high quality, based on broad interests and devotion to learning and investigation. It requires the power of inspiration and character that stirs emulation. It needs, also, teachers who see themselves as instruments in providing the best of medical care to the public and who can blend all these qualities into the effort to turn out good doctors. In my opinion, research as an end in itself—science for science's sake—has no proper place in the basic conception of the purpose of a medical school. Such research belongs in special institutes or in special fellowships and projects collateral to medicine. It is too easy for these highly important and necessary activities to absorb time, effort, and funds that should be conserved for the central purpose of forwarding medical education rather than diffused into the limitless field of general scientific investigation. This means no disparagement of the value of and necessity of the medical school's fostering a scientific and investigative attitude on the part of its faculty toward problems that arise in the proper field of medicine. But, in my opinion, it is a mistake to hold that every teacher needs to be also a research investigator. The schools should have places for men whose chief interest lies in research, but also for those who lack this quality but who are capable clinical teachers, and particularly for those who can have both these interests with, in addition, the gift of inspiration.

This statement of the functions of a medical school, which many will regard as unnecessary and some will not agree with, is made to emphasize to those of us who are academic teachers that our major reason for existence is to produce practitioners of medicine and also to emphasize to those of us who are practitioners that the business of being a teacher in a modern medical school is a highly complicated and demanding calling. We must realize that modern medical teaching needs special kinds of men with special training.

Full-Time and Part-Time Staff Problems

This development has made impossible the running of a medical school properly with a faculty composed entirely of men who give a part of their day to their duties as teachers and the rest to the needs of a large private practice. This has led to recognition of the necessity for whole-time teachers who spend all of the day in the medical school and its associated hospital. They are not to be drawn away by house visits to patients nor by the care of so many patients, even in the hospital, that the time required for academic duties would be encroached upon. Such men, of course, have had to be provided with salaries in lieu of income from practice or with salaries combined with income permitted from a limited practice. Thus has arisen an issue as to the proper adjustment of such means of compensation, one of the current problems of medical school administration. I shall return to this matter later.

I wish to emphasize the fact that medical school teaching, in the clinical as well as the preclinical subjects, has become one of the medical specialties cutting across

the lines of the technical specialties but of itself limiting the activities of its disciples. This is one of the major causes of the gap I speak of. In short, the whole-time system of medical teaching has set boundaries between those whose chief devotion and occupation is the teaching of medicine and those whose chief devotion and occupation is the cure and treatment of individual patients. It must be added that this dichotomy is frequently not complete and absolute. Many practitioners give some of their time to teaching, and many full-time teachers, as part of their duties, take care of patients in the university hospitals. Here the point for emphasis is the essential difference in the type of occupation between the main groups of full-time teachers on the one hand and practicing physicians on the other. This has naturally and inevitably led to divergent interests and attitudes on some matters.

These differences have been exaggerated by certain of the subsidiary aspects of the whole-time system. One of these is what many regard as the unjust discrimination in titles, prestige, and voice in policy-making, in favor of the full-time group and against the physicians giving part of their time to teaching. It is argued that in many places practitioners render as much service, in both the quantity and the quality of teaching, and even in some cases of research, as do the full-time men, and yet grades, promotions, and staff influence and recognition are markedly less than for men of corresponding age and experience in the academic group. The claim is made that unwillingness to accept full-time appointment blocks appropriate compensation for valuable services rendered to the institution as part-time teachers. Not infrequently it happens that quite junior men on the full-time staff are entrusted with teaching responsibilities, operating privileges, and academic titles greater than those of part-time men of mature experience and national stature. On the other hand, the full-time group or at least some of the proponents of that system reply that these discriminations are merely forms of compensation to the full-time men for the sacrifice of the considerably larger financial rewards that may be earned by the part-time men from unrestricted private practice and further that such preferential treatment is necessary to the recruitment and advancement of young men in the full-time program.

Two additional causes of criticism develop from these sources of irritation. One is that the full-time system represents a form of intellectual inbreeding that is wholly undesirable. It is said that the young men who enter the full-time system are trained by teachers and chiefs who, themselves, have never been practitioners in the public sense and have never learned from personal experience the many economic, social, psychological, and personality factors that enter into the proper and full care of individual patients. These young men, thus only partially trained and experienced in the complete care of patients, will themselves become full-time professors and will be even less equipped than their own chiefs to give a rounded and adequate training in medical practice. As time goes on, the whole of medical education will be subject to this vitiating influence, and its effects will be manifested in a deterioration of medical care and in the understanding of medical responsibility. As the scientific aspects of medical study advance, its practical application will retrograde. One need not accept at full face value this Cassandra-like foreboding of doom, but it cannot be denied that there is a very considerable element of truth in it. Certainly steps should be taken to avert such ill-rounded and unbalanced education as even now is abundantly evident. There are numerous stories of the blunders and mistakes committed by young men trained in residencies under the full-time system that I know are true, because I myself committed some of them before my own hard-earned experience in practice taught me better.

Financial Aspects

The financial relations between full-time teachers and practitioners and between the doctors and the institutions are another source of divisive emotions. There are so many different arrangements for disposing of the available money that it is impossible to generalize, but some of the causes of disagreement are evident. The money comes from two sources, institutional funds and patients' fees. It is generally recognized that the institution's funds available for salaries should go in large part to the full-time group. A more fertile source of trouble is the disposal of fees derived from the treatment of patients. Again there is much difference throughout the country in this matter. The curious diversity, not to say perversity, of human nature, as manifested both in practitioners and in those who decide the policies of the schools, finds a rare opportunity to display itself here. Take the very few institutions on the strict financial full-time arrangement. These are staffed from top to bottom with salaried teachers who may not personally accept any fees. All fees revert to the institutions. A curious paradox has developed. The full-time system was set up avowedly to give the staff freedom from the need to earn a living, so that all their time might be devoted to teaching, research, and administrative duties. As it works out in some instances, the full-time professor of a clinical subject has to treat so many private patients to earn so much money for the department to cover his own and other salaries and the other departmental expenses that he has little time left for anything else. One such man told me that he had more freedom for research before he became a full-time teacher than afterward for this very reason. The reaction on the part of the practicing profession to full-time financial arrangements is quite as contradictory. In many places the practitioners resent very much the competition for private patients that the full-time teaching staffs offer. They speak of the hospital's being in practice for profit, and many consider that this is or should be illegal. It is also felt that full-time men are placed in the position of being exploited by the institution—used not only for professional purposes but to yield a financial profit to the institution that hires them and retails their services to the public for private fees. This seems unbecoming if not actually unethical. They think the full-time men should be permitted to retain the private fees they earn, even if they are limited in the amount of their practice by restrictions of bed space or the number of patients they are allowed. On the other hand, in at least one instance,

the local profession objected greatly to the full-time teachers in a state medical school being allowed to keep any of the fees from their patients. The idea was that, since it was a state school, the fees should be turned in to the state to reduce taxes and the teachers should be limited to their salaries. Enough has been said to indicate that the question of financial relationships in full-time and part-time teaching groups and between the institutions and the practicing profession is a fruitful source of trouble and ill feeling.

Professional Responsibilities

It must be accepted that a primary concern of the profession is to know what is going on in medical education, not only on the undergraduate level but also graduate and postgraduate. Doctors should, for their own professional competence, keep abreast of the advances in medicine that are so largely made and utilized in the schools, and they should, in proper ways and with due tact, exercise a monitoring function over the trend of thought and policy in medical school circles to abate unsound deviations and to foster balanced and well-directed programs. Further and very importantly, the profession should support and encourage the schools with sympathy, appreciation, and financial assistance. No matter how much certain individual practicing physicians may disapprove of certain particular performances in certain individual schools, the profession must give the schools, on general basic principles, every possible cooperative aid. But this is a two-way street. The schools must not forget that their primary purpose is to fit men for the actual care of the sick and injured and that such care involves many factors other than those included in the basic sciences related to the study of disease. They no doubt will admit the truth of this statement, but sometimes truths are admitted in the abstract but not concretely applied.

There is reason to think that the time has come for a reemphasis in teaching circles of the importance of regarding the patient as a person and not as a pathological specimen, and it is encouraging to recognize signs that such a movement is already under way. The schools also need to realize more sharply that a good teacher who has no especial flair for research may be a more valuable man for the faculty position than a research man who has no gift or liking for teaching and, further, that, in appraising a research man for medical school positions, it is not so much the weight of his published papers or even their quality that needs consideration as the slant of his interest toward fields that have some relationship to clinical medicine. Everyone knows the necessity for fundamental basic research, but the medical schools, with their limited financial resources and their innumerable demands, are not the places for this particular form of scientific inquiry. As a concrete example of the distinction made, the medical schools quite properly interest themselves in the medical aspects of radioactive isotopes but should not embark on the study of the mathematical physics of the atomic world.

The medical schools already have shown most commendable activity in fostering graduate education by the development of the residency system in their controlled hospitals and by stimulating similar services in other hospitals. But again the color of these services too often is that of academic science rather than of practical care applied to individuals. Both attitudes of course are needed, but so are a proper balance and, especially, a recognition that residency training is clinical training and not laboratory training. It is not enough to teach the most advanced operative attack on congenital heart anomalies. It is even more important to teach that, whether the patient presents a condition that is rare and challenging or one that is most commonplace, the problem remains essentially the same—to treat and cure not a disease but a suffering human being whose illness is not a textbook problem but a problem in human relations.

The schools also may well consider what share they have in responsibility for the continuing adult education of the practicing profession, for postgraduate education as distinguished from graduate or residency training. Some schools are already actively sharing the efforts of the profession to come to grips with this most elusive and ill-defined field of medical education. It would help mightily to close this gap that we are concerned with if all schools would give serious thought to what contribution they might make in this joint effort.

Proposed Changes in Training Program

What has been said is intended to point out general areas in which we should try to bring about more coordinated and harmonious relations between the teaching group and the practicing group of doctors of medicine. I am going to be rash enough to suggest certain specific actions that I believe are sound in themselves and that would aid materially in closing the gap between the schools and the practicing profession. I realize that many will violently dissent from some of these suggestions and that quite possibly no one will agree with all of them. As these are only one man's views and no one else is implicated in any of the ideas and as I am concerned only with a sincere effort to depict an unsatisfactory situation and to make concrete proposals for improvement, the proposals will be submitted for whatever they are worth.

First, those few medical schools and university hospitals that employ no part-time teachers or staff should abandon this system. Such institutions are handicapped in teaching fully rounded clinical medicine and therefore handicap their own graduates in their future careers. Further, such a policy distinctly alienates the institution from the medical profession of its locality and to a lesser degree from the general profession.

Second, university hospitals should abandon the intern year. The recent graduates should be obliged to secure internships in nonuniversity hospitals, returning for such advanced residency training as they may wish at the level of junior or assistant residents. Such a plan has many advantages. Some of these are collateral to this argument, such as the aid this change would give in solving the general intern scarcity in the country by reducing the number of internships. Other such incidental benefits will not even be mentioned. What is to be argued is that such a plan would greatly reduce the gap we are dealing

with. Each intern would thus receive a year of experience in the very practical care of patients in an atmosphere like that in which he himself will live if he later goes into practice. If he continues in an academic career, this year will broaden and round out his otherwise confined intellectual horizon and tend to correct the "ivory tower" distortion of academic medicine. He himself will bring, fresh from his medical school, a stimulating and educational influence into the hospital where he serves his internship.

I know already some of the objections that will be made to this idea. One of my friends, the head of a department in a well-known medical school, protested that it would take him a year, after the return of the interns to his service, to reindoctrinate them with the attitudes and habits of work he wanted them to have. The answer to this is that it frequently takes five or more years for the finished products of such academic training to readjust themselves to the atmosphere of private practice when they leave the hospital and that during this period they would fare much better if they had had an outside internship.

Another objection to the proposal is that internships in the nonuniversity hospitals often are not organized as teaching years and are designed to provide cheap help for the hospital staff in doing the "scut" work and the routine care of patients. No doubt in many instances this is true. The regulatory bodies that approve internships are making steady progress in improving the educational quality of internships in all hospitals, including university hospitals, and much of the force of this objection will soon be lost. There is another counter argument, however, that never seems to be given any weight. It is the fact that learning to do scut work and to carry out the practical routine care of patients is itself highly educational, more so than attendance at seminars on highly specialized paramedical sciences. When the young man leaves his residency, where he has been the top of the heap, with scut work and ward dressings beneath his dignity, it may stand him in good stead as a beginner in building up his practice to have had a year as intern in which service to the individual patient was the principle duty he had to perform. I was a well-trained abdominal surgeon before I learned to put on a good finger bandage or calm down an excited and terrified family. In short, if we are training men for medical service to sick and injured patients, a service-type internship does not seem something to be regarded with undiluted reprobation.

A third suggestion is that medical schools and university hospitals give a warmer welcome and a more nearly equal status to their part-time teachers. Equality, not so much in salary as in rank, voice in policy, and prestige with the students, will enable the part-time men to be more effective in rendering a contribution that they are best fitted to make and that medical education just now greatly needs. That is a more conscious recognition of the patient as an individual and not a "case." As an individual, regardless of his purely medical situation, he has a family, a business, an education, a social background, an emotional complex, all of which affect in varying degrees his medical situation. As has been said, these factors constitute the ecology of the human species and need to be forcibly impressed upon the minds of doctors and medical students. The teachers best equipped to do this are those who, from daily experience and practical necessity, have themselves learned to look for and evaluate these factors in the actual care of patients.

Proposals for Better Professional Liaison

The practicing profession can do its share to narrow the gap between itself and the academic group. More practitioners should be willing to accept part-time unpaid appointments on school staffs and should fit themselves by study and by interest in teaching and research to fill these positions acceptably. I can assure them that no other sort of activity will pay larger returns for the efforts expended. There is no better way to discover one's own deficiencies in knowledge, in the ability to express one's self, and in the habit of organizing ideas than to be obliged to teach others. Also there is no more intelligently critical audience than a class of medical students and none quicker to recognize bluffing and pretentiousness. The man who becomes a good teacher owes the same sort of appreciation for his further education that a medical student owes to the school for his training. The more there are of such part-time teachers, the better will be the understanding between the practicing profession and the academic group and the less isolation between them. One thinks of the marvelous influence of Osler, who lived in the days when all clinical teachers were "part-time" in the modern sense. He was as much a teacher of the practicing profession of Baltimore and Maryland as he was of the boys in his classrooms and ward rounds. Because it is now impractical for the heads of clinical departments to function exactly as Osler did, it is all the more necessary for part-time teachers to render some of the liaison services that Osler rendered. As one who at various times has filled the roles of full-time teacher and of private practitioner and for many years has been a part-time teacher, I can honestly say that I think the last category, part-time teacher, is the richest in opportunity and affords the happiest rewards. The country, the schools, and the profession need more doctors who are willing and able to fill such positions and, if the schools can make such positions more attractive and can recruit larger numbers of properly qualified men, many of the problems discussed herein will disappear.

Only a small percentage of all practicing physicians have the qualifications, the desire, or simply the nearness of residence to fit them for such part-time teaching. But all members of the practicing profession can do something to bring themselves into closer relations with the medical schools and thereby benefit themselves while closing the gap we are discussing.

The rather recently organized American Academy of General Practice has taken formal and active steps to bring its members to participate in postgraduate education in various forms, some of which involve refresher courses in the schools and university hospitals. As this movement gains impetus, many men who never have been back to a medical school since taking their doctor's degree will again make personal contact with the men, the problems, and the helpful facilities of the academic group.

I believe that the various proposals suggested and the wise utilization of the possibilities outlined may bring the academic group and the practicing profession into much closer and happier relations than now exist. But if the gap is to be closed or greatly narrowed, we need a mutual appreciation of the duties we owe to each other and a warmer human feeling for our fellow workers in the provision of care for the patient and the advancement of the art and science of medicine. When the practicing physician realizes sharply the difficulties that members of the teaching group face, the limitations that hamper them, and the great value of their contributions and, on the other hand, when the teachers realize with equal sharpness precisely the same things about their fellows in medical practice, who are actually taking medical care to the patient, we shall see ourselves as brothers-in-arms in the same battle.

203 Westway (12).

TRENDS IN SPECIALIZATION

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• *The type of practice taken up by graduates of American medical colleges was studied by a questionnaire method that yielded data from 21,110 respondents. Of these, 4,225 were graduated in 1945, and the extent to which they had specialized nine years after graduation has been compared with corresponding figures from other classes as far back as 1915.*

The figures show that the services of specialists are becoming more readily available to the physicians and the public in the smaller communities. The proportion of physicians specializing in eye, ear, nose, and throat has decreased greatly and there has been some decrease in the proportion for public health and industrial medicine, but many of the specialties show little change over the years. Anesthesiology, pathology, and thoracic surgery show a definitely increased proportion of those specializing.

The proportion of medical school graduates who practice individually has decreased progressively. Of the 1945 graduates, 26.8% reported that they were occupying full-time salaried positions. Additional significant data relating to internships, residencies, and board certification were obtained.

Some 30-odd years ago, when I first became dean of a medical college, I developed an interest in the nature of the responsibilities that our graduates were assuming in the medical care of the American public. It occurred to me that, as producers of physicians, it might be worthwhile for medical schools to follow the lead of industry and give some attention to marketing research as well as to product planning.

With this in mind, I initiated a program for a survey of every fifth class of graduates of American medical colleges. The program as originally planned involved a study of the graduates six years after graduation. The development of graduate training programs and the demands of the military forces, however, induced me to lengthen the period between graduation and the surveys. Only the classes of 1920, 1925, and 1930 were studied six years after graduation. The graduates of 1915, who were studied at the same time as the 1920 graduates, were surveyed after 11 years; the graduates of 1935 were surveyed after 15 years, the graduates of 1940 after 10 years, and the 1945 graduates after 9 years.

Although these varying intervals must be borne in mind in interpreting some of the findings, the data appear to warrant many definite conclusions as to trends in the careers of the graduates of our medical schools. Data for all the studies were obtained from questionnaires sent to each graduate of the specified years. A grand total of 28,783 questionnaires was sent, of which 21,110, or 73.3%, were returned.

Relatively complete data in regard to the results of the earlier studies were published in the *Journal of the Association of American Medical Colleges*. At this time I will present certain data in regard to trends toward specialization for the graduates of 1945, together with such comparable data as is available for the graduates of the previous classes studied. More complete data relating to the graduates of 1945 will be published elsewhere.

Table 1 gives data in regard to the type of practice of the graduates of the various years studied. The proportion of graduates in general practice has remained fairly constant, except for those of the year 1930, which was at the height of an economic depression, and the graduates of 1945. On the other hand, the proportion limiting their practice to a specialty has markedly increased. The great increase in the percentage limiting their practice to a specialty has been largely at the expense of those in general practice giving special attention to a specialty. The progressively decreasing percentage of graduates in this latter category is probably due to the increasing complexities of modern medicine and the general recognition of the long intensive training required in preparation for the practice of a specialty.

To get a clearer picture of the changes that have occurred in the increase in the number of graduates limiting their practice to a specialty, attention should be given to absolute numbers as well as percentages. The base on which the percentages were figured varied with the different years studied. For example, table 1 indicates a 40% increase between the 1925 and 1945 graduates

Chairman, Council on Medical Education and Hospitals, American Medical Association.

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Mrs. Anne Tipner of the office of the Council on Medical Education and Hospitals of the American Medical Association collected the questionnaires, and Miss Marion Altenderfer, Statistician, United States Public Health Service, made the statistical studies.

limiting their practices to specialties, whereas the actual increase in numbers is from 1,097 to 3,128, or an increase of nearly 200%.

The proportion of graduates of the individual medical schools who limit their practice to a specialty varies greatly. Four schools have less than 50% of their 1945 graduates limiting their practice, while 14 schools show

TABLE 1.—*Medical College Graduates, by Type of Practice, 1915, 1920, 1925, 1930, 1935, 1940, and 1945 Classes*

Type of Practice	Yr. of Graduation 1915	1920	1925	1930	1935	1940	1945
	No. of Graduates						
Total	1,834	1,947	3,230	3,710	3,186	3,534	4,225
General practice	412	464	811	1,168	802	815	799
Special attention to specialty	653	786	1,307	1,405	570	410	246
Limited to specialty	751	682	1,097	1,126	1,768	2,260	3,128
Not practicing or type not specified	18	15	15	11	46	49	52
	Distribution, %						
General practice	22.5	23.8	25.1	31.5	25.2	23.1	18.9
Special attention to specialty	35.6	40.4	40.5	37.9	17.9	11.6	5.8
Limited to specialty	40.9	35.0	34.4	30.4	55.5	63.9	74.1
Not practicing or type not specified	1.0	0.8	0.5	0.3	1.4	1.4	1.2

comparable figures of more than 85%. With a few exceptions, the more fully developed medical schools show a higher than the average proportion of their graduates limiting their practice.

Distribution of Specialists

The importance of the ready availability of qualified specialists to high standards of medical care for the American public has been repeatedly emphasized and the concentration of specialists in the larger communities repeatedly criticized. There appears to be a trend toward a constantly increasing number of specialists practicing in the smaller communities.

The distribution of the 1935, 1940, and 1945 graduates who are in private practice and have limited their practice to a specialty is shown in table 2 according to

TABLE 2.—*Graduates in Private Practice Who Have Limited Practice to Specialty, by Size of Community of Practice, 1935, 1940, and 1945 Classes*

Population of Community of Practice	1935 Graduates, % of 1,332 Specialists		1940 Graduates, % of 1,615 Specialists		1945 Graduates, % of 2,194 Specialists	
500,000 or more	33.4		31.0		23.7	
100,000-499,999	28.8		27.5		28.3	
50,000- 99,999	11.8		12.5		12.6	
25,000- 49,999	11.3		14.4		13.7	
5,000- 24,999	12.3	25.9	12.0	29.0	18.4	35.4
2,500- 4,999	0.4		0.6		1.0	
Less than 2,500	1.9		2.0		2.3	
Unknown	0.1		....		....	

size of community of practice. Combining the figures for the smaller communities, we find that 35.4% of the 1945 graduates who are in private practice and have limited to a specialty are located in communities with populations of less than 50,000. This compares with 29% of the 1940 graduates and 26% of the graduates of 1935. In fact, we find that 21.7% of the 1945 graduates who are in private practice and who have limited their practice are located in communities with populations of less than 25,000. It is difficult to state how important recent hospital construction programs and the spread of group clinics have been in attracting more specialists to the smaller communities. Whatever the explanation, it appears clear that the services of specialists are becoming more readily available to the physicians and the public in the smaller communities.

Popularity of Specialties

At the time these studies were initiated, it was necessary to use a rather crude classification of the specialties. For purposes of comparison, an effort has been made to fit the data from all classes into this original classification. Table 3 shows the relative popularity of these specialties among the graduates of the different years. Perhaps the most marked change as the studies have progressed is

TABLE 3.—*Percentage Distribution of Medical College Graduates Who Have Limited Practice to Specialty, by Specialty, 1915, 1920, 1925, 1930, 1935, 1940, and 1945 Classes*

Specialty	Distribution of Graduates by Yr. of Graduation 1915	1920	1925	1930	1935	1940	1945
No. in all specialties	751	682	1,097	1,126	1,768	2,260	3,128
Eye, ear, nose, and throat, %	22.5	18.2	16.7	13.0	11.3	8.6	6.5
Internal medicine, %	18.1	18.3	17.3	17.8	19.4	23.8	24.1
Surgery, %	20.2	15.5	18.5	17.7	20.0	24.0	21.1
Pediatrics, %	6.0	11.3	9.9	7.5	6.4	6.9	9.2
Gynecology and obstetrics, %	5.9	6.7	6.8	5.6	10.0	10.0	8.4
Neuropsychiatry, %	4.7	6.6	5.8	12.5	8.1	6.5	8.2
Genitourinary, %	5.3	5.9	4.7	4.1	3.4	3.1	2.9
Laboratory and radiology, %	7.6	8.6	8.4	10.8	7.9	8.6	9.6
Public health, %	3.5	3.2	4.6	4.1	3.6	1.2	0.8
Industrial (medicine & surgery), %	2.4	1.3	1.4	0.7	1.1	0.5	0.5
Syphilology and dermatology, %	0.9	2.2	2.8	1.9	2.7	2.0	2.0
All other,* %	2.9	2.0	3.0	4.4	6.1	4.8	6.7

* Includes a few specialists who did not specify specialty.

the great and progressive decrease in the proportion who have chosen the eye, ear, nose, and throat specialty. Many of the specialties show relatively little change over the years. Public health and industrial medicine, however, have apparently become less popular fields.

More detailed information according to currently recognized and reported specialties for the graduates of 1935, 1940, and 1945 is shown in table 4. Although most of the specialties show only slight changes, in others tendencies toward certain trends appear. Internal medicine, pediatrics, and psychiatry show some increase in popularity, and anesthesiology, pathology, and thoracic surgery show a definitely increased proportion of those specializing. On the other hand, there is a definite decrease in the proportion specializing in eye, ear, nose, and throat; in public health; and in obstetrics (as a separate specialty).

Type of Practice

Certain trends in regard to type of practice are evident for all medical school graduates, with a progressively decreasing proportion practicing individually. Table 5 shows that, of 1945 graduates who have limited their practice to a specialty, there were only 41.5% practicing

individually; 28.2% were in partnership or group practice, 7.8% in teaching or research positions, and 10% in the armed forces or other federal services.

Full-Time Salaried Positions

Of the 1945 graduates, 26.8% reported that they were occupying full-time salaried positions. Of these, 23.9% were in hospitals and institutions, 19.5% in medical college teaching and/or research, 10% in group practice, and 28.4% in the armed forces or other federal positions. Of those in full-time salaried positions, 90.9% were limiting to a specialty. Thus, 32.6% of the graduates limiting their practice to a specialty were occupying full-time salaried positions.

TABLE 4.—*Percentage Distribution of Limited Specialists, by Specialty, 1935, 1940, and 1945 Classes*

Specialty	1935 Graduates, % of 1,768 Specialists	1940 Graduates, % of 2,260 Specialists	1945 Graduates, % of 3,128 Specialists
Allergy	0.7	0.3	0.2
Anesthesiology	2.2	3.0	4.0
Bacteriology	0.2	*	*
Cardiovascular disease	0.5	0.3	0.2
Dermatology and syphilology	2.7	2.0	2.0
Ear, nose, and throat	3.1	3.1	2.5
Eye, ear, nose, and throat	3.7	1.5	0.6
Gastroenterology	0.3	0.2	0.2
Gynecology, gynecology and obstetrics	9.4	9.3	8.3
Industrial medicine and surgery	1.1	0.5	0.5
Internal medicine	18.6	23.3	23.7
Neurological surgery	0.7	0.9	1.1
Neurology	0.2	0.1	0.4
Neuropsychiatry	3.0	1.8	1.3
Obstetrics	0.6	0.7	0.1
Ophthalmology	4.5	4.0	3.4
Orthopedic surgery	4.1	5.2	3.8
Pathology, clinical pathology	2.0	3.5	3.7
Pediatrics	6.5	6.9	9.2
Physical medicine and rehabilitation	0.3	0.3	0.3
Plastic surgery	0.5	0.6	0.6
Proctology	1.0	0.3	0.1
Psychiatry	4.9	4.6	6.5
Public health	3.6	1.2	0.8
Pulmonary disease	1.4	0.7	0.5
Radiology	5.7	5.0	5.9
Surgery	13.0	16.4	13.1
Thoracic surgery	0.6	0.7	2.4
Urology	3.4	3.1	2.9
All other	1.3	0.4	1.4
Not reported	0.2	0.1	0.3

* Less than 0.05%.

TABLE 5.—*Medical College Graduates Who Have Limited Practice to Specialty, by Various Types of Practice—1945 Class*

Type of Practice	No. of Graduates	Distribution, %
All types	3,128	100.0
Individual	1,298	41.5
Partnership	544	17.4
Group	337	10.8
State or local health department	32	1.0
Teaching and/or research	243	7.8
Armed forces *	170	5.4
Other federal government	144	4.6
Hospital administration	4	0.1
Other hospital, clinic	144	4.6
Industrial practice	21	0.7
Resident, fellow	167	5.3
All other	24	0.8
Not specified	...	....

* Includes U. S. Army, Navy, Air Force, and Public Health Service.

Graduate Training

Of those limiting their practice to a specialty, 78.9% served general rotating internships and 21% straight or mixed internships. Table 6 shows data in regard to the graduate training of the graduates of 1935, 1940, and 1945 who have limited their practice. This table suggests a progressive improvement in the graduate training of this group.

TABLE 6.—*Graduate Training of Medical College Graduates Who Have Limited Practice to Specialty—1935, 1940, and 1945 Classes*

Type of Graduate Training	Yr. of Graduation 1935	1940	1945
Internship in specialty only	0.6	0.2	0.1
Residency in specialty	71.9	85.8	90.4
Other residency	7.4	3.9	1.9
Type of residency not specified	4.7	3.4	5.1
Other training in specialty only	12.2	4.6	1.7
No training in specialty	3.2	2.1	1.7

In contrast, table 7 shows data in regard to internship and residency training of graduates who have undertaken careers in general practice. Although more than 90% had rotating internships, only 30% had training beyond the internship.

Board Certification

Our studies indicate an increasing tendency for those limiting their practice to seek American board certification. While only 1,453 of the 3,128 graduates of 1945 limiting their practice reported such board certification, it should be appreciated that the requirements of the various boards are such that many have not yet had time to qualify. Of those taking residency training, 86.7% reported some interruption in their training because of military service. Of these, 1,132 had completed their training within the two years immediately preceding this study and 68 were still in training.

TABLE 7.—*Internship and Residency Training of Medical College Graduates in General Practice—1935, 1940, and 1945 Classes*

Internship and Residency Training	1935 Graduates, % of 802 General Practitioners	1940 Graduates, % of 815 General Practitioners	1945 Graduates, % of 799 General Practitioners
With internship	99.8	99.8	99.9
With residency	29.7	37.7	29.3
No residency	70.1	62.1	70.6
Rotating or general internship	91.2	93.4	91.4
With residency	26.6	34.4	26.8
No residency	64.6	59.0	64.6
Other internship	8.6	6.4	8.5
With residency	3.1	3.3	2.5
No residency	5.5	3.1	6.0

I would like to emphasize the fact that the data that I have presented represent the trends in specialization of graduates up to and including the class of 1945 and may be justly criticized as not representing those of the more recent graduates. However, accurate data can be secured only by deferring the survey of a given class until its graduates have had the opportunity to become established in their careers. Whether or not current programs undertaken by many medical schools and medical societies will materially influence these trends cannot be foreseen.

PROGRAM OF POSTGRADUATE MEDICAL EDUCATION

Robert S. Warner, M.D.
and
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• *The four-phase program of postgraduate medical education here described consisted of formal specialized courses at a medical school, informal seminars brought by a team of physicians to rural communities, early-morning open-circuit television programs, and audiovisual seminar kits.*

The intramural phase was easily evaluated in terms of attendance and direct expressions from the participants. It was one of the two most popular methods, and the most enthusiastic reception was given to courses on heart disease, on medicine in general practice, and on legal implications of medical practice.

The three extramural phases were evaluated similarly, the telecast being followed by telephone interviews and mail questionnaires to measure the amount of information actually gained by the medical audience.

The results showed that physicians can gain new medical information by these means and that they participate with enthusiasm in programs for continuing medical education.

Medical education in its broadest scope includes four years of undergraduate education in medicine, graduate training, and, most desirably, a lifetime of postgraduate medical education. The Council on Medical Education and Hospitals of the American Medical Association in a recent report [1] emphasized the fact that postgraduate medical education is rapidly becoming recognized as an integral part of the whole structure of medical education. A number of medical schools in the United States have, within the past 10 years, assumed initiative in carrying to the busy practitioner the prize fruits of medical science as they apply to the everyday problems of medical care.

Three years ago the University of Utah College of Medicine received a generous grant from the W. K. Kellogg Foundation to be used in developing and maintaining a program of postgraduate medical education for the intermountain West. Recognizing the value of the several techniques already in operation for educational communication between a medical center and a practicing physician, the school has endeavored to seek out new mediums that might expand and improve existing programs. After three years of activity, a report on a program that has been singularly successful for all participants seems appropriate.

During the past year, we have conducted two surveys of the impact of several aspects of our program on the recipients—the practicing physicians. Accordingly, the statements included in this report represent not only the attitude of the faculty but, more important, the response of the recipients.

Intramural Courses

Postgraduate courses represent the center of activity in most programs of postgraduate medical education. Our experience has been primarily with courses of three to five days' duration in which an effort has been made to present present-day practice in all fields of clinical medicine. Emphasis is always placed on practical aspects of diagnosis and treatment, initiated by a presentation of basic implications that are essential to an understanding of the immediate goal. Obviously, the educational response has varied with the faculty and the material for a course. Courses on heart disease, especially electrocardiography, have met with the most enthusiastic reception, as have courses in medicine applied to general practice. An evening course on legal implications in the practice of medicine presented by the dean of the University of Utah College of Law twice a week for eight weeks has been especially well received. A recent survey [2] of the physician-participants indicated that the intramural course and television clinics were the two most popular methods of postgraduate medical education.

Extramural Program

The Mobile Medical School.—In a far-flung geographical medical community, the busy practitioner is often unable to leave his community where he is the only physician for a long enough period to attend a course at the medical center. Accordingly, we have initiated a program that offers an afternoon and evening of clinical education in communities that are more strategically situated for practitioner participation. This program has been strengthened by a generous grant from the Commonwealth Fund to purchase a station wagon with a variety of teaching devices for such clinics. These include an obstetric mannequin, a model nursery for the premature infant, a portable electrocardioscope with a device for generating abnormal electrocardiographic patterns, and slide and film projectors. In a collaborative enterprise with the Arizona State Medical Association, we have conducted a series of one-day clinics in which the faculty travel by night from community to community and offer afternoon and evening clinics on a variety of practical subjects. Obviously the desirable goal of postgraduate medical education is to carry the program to the physician with the minimal loss of time from his practice. We have experimented with two such devices, both of which have proved uniquely successful.

Director, Division of Postgraduate Medical Education, University of Utah College of Medicine (Dr. Warner), and Dean, University of Utah College of Medicine (Dr. Bowers). Dr. Warner is now Assistant Medical Director, American Heart Association, New York, and Dr. Bowers is Dean, University of Wisconsin Medical School, Madison, Wis.

Dr. John Waldo, Salt Lake City, was the first director of the program described.

Audiovisual Seminar Kits.—Most programs designed for postgraduate medical education are group activities and usually necessitate travel to a central meeting place by the participating physician. In an effort to supply the busy practitioner with a "medical discussion" at home, the University of Utah College of Medicine has developed a packaged program known as the Audiovisual Seminar Kit.[3] This kit contains a recorded medical discussion, a set of 35 mm. slides correlated to the discussion, a tabletop viewer for the slides, and a script of the medical discussion. Standard long-playing records (33⅓ rpm) were used to record the medical presentation, and therefore the physician using the kit was required to furnish only a long-playing record player. The kits on a specific medical subject were sent to the physician on request. Subjects presented in these audiovisual kits included "Reliability of Radiological Diagnosis," "Lesions of the Cervix and Vulva," "The Radiological Examination of the Chest," "The Role of the Blood Smear in Hematologic Diagnosis," and "The Surgical Treatment of Varicose Veins." The use of the kits was limited to the state of Utah initially, and the reception was enthusiastic. In a six-month period, more than a third of all the physicians in the state of Utah had used one or more of these kits. Although the audiovisual seminars were designed primarily for individual use, they are readily converted for group presentation by use of a 35 mm. slide projector and an amplification system for the record player. Physicians in the rural areas frequently use the kit as part of their program for hospital staff meetings and for county medical society meetings. By providing the physicians of Utah with this educational aid, the College of Medicine was able to meet the challenge of postgraduate medical education: to provide interested physicians with a convenient and comfortable method of continuing their medical education.

Open-Circuit Medical Television.—In November of 1953, the University of Utah College of Medicine introduced a series of telecasts designed for physicians only. These televised medical clinics originated from Salt Lake General Hospital and were televised to physicians in the intermountain area through facilities of radio station KDYL-TV (now known as KTVT). The telecasts were scheduled on Tuesday mornings from 7 to 8 a. m., an hour when the largest physician audience is available and public viewing is at a minimum. This first series of four clinics presented at weekly intervals represented a unique experiment in the field of medical education, but more important was the evaluation [2] of this limited educational experience. By means of a telephone survey, physicians in the area of television reception were contacted and queried as to their reactions to this form of postgraduate medical education. This survey revealed several important points, namely, (1) that 49% of the physicians in the area of television reception of KDYL-TV viewed one or more of the medical telecasts, (2) that 74% of the physicians viewing the medical clinics felt that they had gained some new facts from this educational experience, and (3) that less than 5% of all the physicians in the intermountain area objected to the use of open-circuit television for purposes of medical education. A television survey conducted in an effort to determine the degree of public viewing of these telecasts showed that less than 1% of the general population had seen these clinics, and there were no unfavorable comments from this group.

In recognition of the potentialities of this type of postgraduate education, a second series of telecasts was developed with the aid of a supplementary grant from the W. K. Kellogg Foundation. In addition to a careful evaluation of audience reaction, an attempt was made to determine whether a physician could increase his medical knowledge by viewing these televised medical clinics. Again telecasts were presented at the early morning hour, and the programs were kinescoped for distribution to other areas throughout the United States. Surveys conducted by phone interviews and mail questionnaires were carried out and again certain interesting features were evident. The audience for the second series of telecasts originating from Salt Lake City represented 31% of the physicians in the intermountain area, and as in the first series of telecasts, the physicians in the rural areas accounted for the greatest percentage of the audience. The mail questionnaire containing a "quiz" section regarding the televised medical clinics represented the first attempt to find out if new information was gained from educational television programs. The questionnaire was sent to all physicians, and both viewers and nonviewers were asked to answer the questions. Results of this survey indicated that in three out of four clinics the physician viewing the telecast was able to supply 20 to 25% more correct answers than the nonviewing physician. These results confirmed the impression that physicians can gain new medical knowledge through the audiovisual medium of television.

Conclusions

The four-phase program of postgraduate medical education as carried out by the University of Utah College of Medicine in 1953-1954 provided the physician with unique education opportunities. The formal postgraduate courses held at the medical school were designed for specialized instruction, while the rural seminars brought a team of physicians to a community for informal discussion of general medical problems. The "home study" by means of open-circuit television and the audiovisual seminar kits provided the rural practitioner with unusual opportunities to continue his medical education without loss of time from a busy community practice.

Such a program of medical education was made possible only by the close cooperation of the University of Utah College of Medicine and the Utah State Medical Society and generous grants from the W. K. Kellogg Foundation. Most important was the enthusiastic participation of the physicians interested in continuing their medical education.

44 E. 23rd St., New York (10) (Dr. Warner).

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CLINICAL NOTES

A NEW INJECTOR DESIGNED TO MINIMIZE PAIN AND APPREHENSION OF PARENTERAL THERAPY

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and
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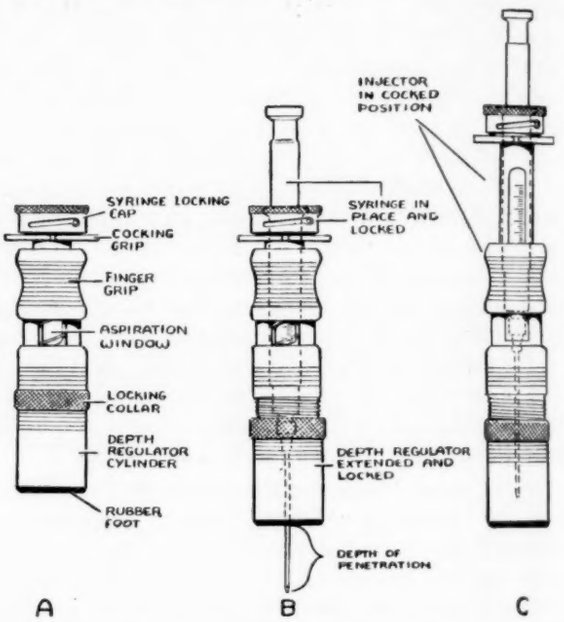
It has been 100 years since Alexander Wood [1] first published his account of the use of the hypodermic syringe and hollow needle for injection of drugs through the skin. During this century, syringes and needles have been widely and extensively used. Today many of our drugs and methods of therapy and diagnosis would be impossible without them. When used properly, only slight pain is experienced when the skin is pierced by a needle, but there is nevertheless apprehension and considerable dislike for this method of treatment. Since hypodermic needles are often used on very young persons, they leave impressions on the minds of developing infants and children that are sometimes never erased. It is probable that doctor-patient relationships are profoundly and adversely influenced by these early painful injection experiences.

Because of the great number of patients of all ages who dislike or avoid injections, we have sought for a substitute or some modification of injection methods that would minimize the pain factors as well as the apprehension for these procedures.[2] It is the purpose of this paper to describe and evaluate an instrument (the Presto injector) that appears to be one of the most satisfactory injection devices that has appeared thus far. It is a semiautomatic injector that may be used by either the patient or the physician. It was designed not only to minimize the pain caused by physical stimulation of pain fibers by the needle but also to minimize the psychological aspects of the pain of needle injections. For the physician, it will make possible a technique of injection or a finesse otherwise unattainable. For the patient who must resort to routine self-injection, it will be a boon in that it is practically painless and the patient will not need to get up courage to pull a trigger, for the trigger is automatic. For giving injections to children and others who are unduly apprehensive of such procedures, it will be especially desirable, as the needle is entirely hidden from view. The psychological and practical aspects of all these features will not be fully appreciated until the instrument has been in use for some time.

Description and Method of Using Injector

The device (Presto injector) is a series of metal cylinders for holding and very rapidly projecting a syringe and needle (see figure). When the instrument is cocked (figure, *C*) and ready for application, the needle is retracted and entirely concealed in a depth-regulator cylinder that has been adjusted and locked (figure, *B* and *C*) in position (prior to cocking, *B*) to regulate the depth of the injection. The upper part of the cylinder is built to house and securely hold the syringe, which is locked into position by turning the syringe-locking cap clockwise. The upper part of the device also has a short, thick cylinder (*C*) with finger grooves to facilitate holding the instrument. This holding cylinder also conceals the spring mechanisms and activates the automatic trigger device. Just below the finger-grip cylinder there is an aspiration window that makes it possible to determine whether the tip of the needle is in a vein before any of the drug is injected.

To use this instrument, a sterile needle and syringe are assembled and filled in the usual manner. The Presto injector is then held in two fingers so that it hangs vertically. The syringe is also held vertically and introduced into the injector. With a little practice, it is possible to drop the syringe and needle into place (figure, *A* and *B*).



Presto injector. *A*, before introduction of syringe; *B*, after inserting syringe and needle, depth regulator adjusted; *C*, needle hidden by cocking instrument.

The locking collar or cap is then turned counterclockwise and the syringe flange or shoulder of the syringe oriented so that it matches and slips into the locking collar. It is locked into position by turning the cap clockwise. The syringe should always be introduced into the injector when it is in the uncocked state (figure, *A* and *B*). The needle then projects from the depth-regulating sleeve. This sleeve may be adjusted by rotating the extension to give the desired needle protrusion and thus give either very shallow subcutaneous or deep intramuscular injections. After the depth adjustment has been made, the locking ring is tightened. The instrument is cocked and the needle retracted by holding each end (cocking grip in one hand; depth-regulating sleeve end of the instrument in the other) and pulling the cylinders apart until the trigger engages. The needle is then completely hidden and the instrument ready to apply to the patient (figure, *C*).

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The instrument described was developed by a group of investigators sponsored by the Becton, Dickinson Company, Rutherford, N. J.

After the skin is scrubbed on the selected injection site with alcohol, the rubber foot is placed lightly against the skin. Without hesitation the pressure is increased until the automatic trigger releases the syringe holder. A spring pushes the needle and syringe straight forward with relatively high velocity. The velocity of the needle has been determined by means of an oscilloscope and found to be approximately 1 cm. per 0.01 second. The time necessary for the needle to penetrate the superficial layer of pain fibers in the dermis is thus less than 0.003 second. This is one of the extremely important features of the instrument.

After the needle has been introduced in such a rapid and painless way, pull is exerted on the plunger, and, if the needle is in a vein, blood drawn into the syringe is seen through the aspiration window. A finger ring has been designed to fit on the plunger to facilitate the aspiration procedure if and when it is necessary to operate the instrument with one hand. When it has been ascertained that the needle is not in a vein, the material is injected by applying pressure on the plunger in the usual manner. The needle is removed by retracting the entire injector as rapidly as possible by hand.

Principles Involved in Minimizing Pain of Injection Procedures

Effect of Spatial and Temporal Summation of Pain or Pain Response.—It has been well established [3] that the intensity of any type of stimulus (pain included) is registered in the nervous system by means of spatial and temporal summation of impulses. In other words, the degree of pain experienced as a result of a relatively short pain stimulus applied to a very small area depends on the duration of the stimulus and the total area to which the stimulus is applied (number of pain fibers stimulated multiplied by the duration of the stimulus in milliseconds). The previous attempt to minimize pain of injection procedures by confining the stimulus to a small area (decreasing spatial summation effects) by means of fine bore jets met with some success.[4] However, when larger quantities of material (1 cc.) were injected through very small orifices, the increased time necessary and the factor of temporal summation overshadowed the gain achieved by minimizing spatial summation. In the development of the Presto injector, the element of spatial summation of pain was for the most part ignored, for any size needle may be used. The major effort was directed to shortening the time or duration of the stimulus in order to significantly minimize the temporal summation of pain impulses. The effectiveness of the principle of shortening the time interval to minimize the temporal summation of pain impulses and pain impressions may be illustrated by calling attention to these facts. A very hot object may be touched without eliciting a painful reaction if the time of contact is extremely short (0.001 second). A contact with the same object for from 0.5 to 1 second would be very painful. It is also well known by patients as well as doctors and nurses that the best and least painful injections are those in which the needle is introduced most rapidly. A cut, if made rapidly enough, is hardly felt.

In actual tests, an oscilloscope was used for timing the velocity of the needle movement when introduced by the Presto injector. The rate of introduction of the needle was two to three times as fast as that found for manual introduction of the needle performed as rapidly as possible. Thus, the duration of the needle pain stimulus with the Presto injector was 2 milliseconds as compared with 4 to 7 milliseconds for manual introduction. The needle also stimulates pain fibers and/or touch fibers during the process of withdrawal. At least many individuals stated that they did not feel the needle as it was introduced by the Presto injector but were aware of the needle during withdrawal, although this was not described as a painful sensation.

Effect of Concealed Needle on Psychological Reaction to Pain.—In addition to the rapid introduction of the needle to shorten the time and minimize temporal summation of pain impulses, the Presto injector influences pain reactions in other ways. The fact that the needle is entirely hidden from view before the injector is applied has a very remarkable psychological effect. It appears that the very sight of a syringe and needle leads many patients to receive an exaggerated impression of the pain actually produced by the needle, or conversely they are not aware of pain stimuli when they never see the syringe or needle. At least, when the same size needles were introduced by similar automatic and semiautomatic injector devices, the subjects experienced much less pain if the needle was not seen at any time before or during the injection. The decrease in the pain response that is related to concealment of the needle greatly exceeded expectations and was truly remarkable.

Effect of the Automatic Trigger on Pain Response.—While the automatic trigger device does not have much influence on the degree of pain experienced, it does have some. This arises from the fact that the Presto injector eliminates the nervous tension that develops during the time that the patient or operator musters up courage to pull the trigger device on other injectors.

Methods of Testing the Instrument

In testing other types of injectors that did not involve the use of needles,[5] the records of the pain responses were recorded in five different categories, depending on the degree of pain experienced. These responses are the logical responses of human subjects to pain of this type. Numbers were assigned to these responses to facilitate tabulation and arrangement in order of degree of severity of the pain. It was found quite early that many factors enter into the response of the patient. The things that the patient sees and hears prior to the injection and what he is told concerning what to expect are all very important. In addition, various subjects react quite differently physically and psychologically to the same set of conditions. As would be expected, if the patient's mind is directed into channels of concentration such as counting procedures or other activities, the pain responses are considerably diminished.

The general reactions of patients to an injection in ascending order of the pain experienced are: 1, no sensation; 2, slight sensation; 3, slight sting; 4, a definite sting; and 5, pain. The first two reactions are regarded as an

indication that there is little or no pain associated with the procedure. The last two reactions are expressions of pain in varying degrees, and beyond the expression of pain (no. 5), no attempt was made to evaluate the response more quantitatively. In assigning numbers to these reactions, it was thought that it might be possible to treat these in a quantitative way and obtain average response data. This does not appear to be practical because of the large number of variable factors that regulate the response.

Results

In the table, the responses to injections of 50 normal human subjects to each of five types of injection procedures were recorded. In this experiment, 50 individuals were given injections with the Presto injector and 50 by regular manual methods in which the needle and syringe were exhibited to the patient and the patient watched the procedure. The same procedure was repeated on the same subject, but the patient did not see the syringe or needle and did not watch the procedure.

Pain Response of Fifty Men Given Injections Manually and with Semiautomatic Injectors

Type of Injection	No. of Subjects Showing Pain Response				
	1*	2	3	4	5
Presto injector	40	8	2	..	..
Semiautomatic A-(Busher)	6	20	17	7	..
Semiautomatic B injector	5	15	22	8	..
Manual syringe and needle (hidden)	2	18	23	5	2
Manual syringe and needle (exposed)	2	8	22	13	5
Totals	55	69	86	33	7

* 1 indicates no sensation; 2, slight sensation; 3, slight sting; 4, sting; and 5, pain.

Two automatic or semiautomatic injection devices in which the patient could see the syringe and needle were tested on the same 50 subjects. It may be seen from the table that most of the reactions in all categories with all types of injection fall into the no. 2, no. 3, and no. 4 class, i. e., "slight sensation" to "sting." Manual injection, however, produces a greater number of painful reactions, and the automatic injectors produce a greater number of "no sensation" reactions. In this respect, however, the Presto injector proved to be superior, and there were no reactions in the "sting" or "painful" categories (no. 4 and no. 5).

A second type of experiment was designed to test the instrument in a practical way. A Presto injector was given to a family in which the mother required an injection of cyanocobalamin (vitamin B_{12}) three times a week over a period of one year. The son and husband were instructed in the use of the instrument. A total of 150 injections was given with the Presto injector. The operator and subject were the same in each operation. The material used was 1 cc. (1 mg.) of cyanocobalamin solution. This was given intramuscularly into the right and left triceps muscle alternately. After the injection, the subject or patient was questioned as to the sensation. Out of 150 injections, the patient had no sensation or pain in 123, while the other 27 injections were accompanied by a slight stinging sensation. A few times the patient experienced nothing when the needle entered but felt discomfort when the drug was injected. In this experiment, both the patient and the operator of the injector were so satisfied with the instrument and the method that it was difficult to persuade them to relinquish the instrument for examination and checking during the course of the injections.

Summary and Conclusions

On the basis of tests with the Presto injector that have extended over a period of almost two years, the following conclusions may be drawn: The Presto injector is a device that will permit doctors, nurses, or patients to make subcutaneous or intramuscular injections in a relatively painless manner. The main factors that minimize the pain and apprehension, in order of importance, are the high velocity or speed of the penetrating needle, concealment of the needle and most of the syringe, and the automatic trigger on the instrument. The Presto injector is small and light in weight and easy to carry from place to place. Since it is activated by springs, it is not dependent on electric current and may be used anywhere. The instrument is not designed to save time or to speed up injection procedures. While the instrument itself does not need to be sterilized, the usual procedures for sterilization of syringes and needles have not been eliminated. Sponges moistened in alcohol may be used to clean the instrument. Since the additional maneuver of placing the syringe in the instrument is added, the time required for any injection will be slightly greater than with regular manual methods of holding the syringe. For the physician this will be a disadvantage that will have to be weighed against the favorable reaction of his patients to a more perfect injection technique. The major field for use of this instrument will be in persons who require self-injection of drugs in a routine continuous manner. It has been shown that for this purpose this instrument is ideal.

29 S. Green St. (1) (Dr. Figge).

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5. Footnote 2*b* and *c*.

Thumbsucking.—Thumbsucking is one of the earlier examples of learning in the infant. It seems to follow all the general laws of learning. . . . If the response is considered undesirable, the parent should remove the reinforcement which the response brings about, or remove the stimuli involved before the thumbsucking response has a chance to be aroused. With the acquisition of verbal facility on the part of the child one would expect that the response should drop out by itself as the appropriate cause and effect relationships are learned. This, of course, presumes that the response has not, in the meantime, taken on other rewarding characteristics such as the manipulation of adult behavior as a result of constant parental concern over the child's behavior.—D. S. Palermo, Thumbsucking: A Learned Response, *Pediatrics*, March, 1956.

FATAL APLASTIC ANEMIA AFTER THERAPY WITH NUVARONE (3-METHYL-5-PHENYLHYDANTOIN)

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Jerome A. Gold, M.D.
and
Victor Ginsberg, M.D., Brooklyn, N. Y.

The occurrence of blood dyscrasias resulting from therapy with antiepileptic drugs has been emphasized repeatedly in excellent reviews of the literature.[1] Of the well-established hydantoin derivatives, Mesantoin (3-methyl-5,5-phenylethylhydantoin) has been the chief offender in the production of cytopenia.[2] Diphenylhydantoin (Dilantin) sodium has been notably free from hematopoietic toxic reaction.

In the constant search for safer and more effective anticonvulsants, Nuvarone (3-methyl-5-phenylhydantoin) was first studied by Everett and Richards.[3] It was judged safe as a result of animal experiments and early clinical trials. Livingston and Sweet [4] then reported clinical results in 42 patients with no hematological changes found. In Peterman's [5] report on 42 patients, mild leukopenia was observed in 2, with no change in hemoglobin level, red blood cell count, or platelets. The largest study reported has been from the seizure research clinic of Bellevue Psychiatric Hospital by Taterka and Thompson [6] on 91 patients, 25 treated by Nuvarone therapy alone and 66 by Nuvarone therapy in association with other antiepileptics. Five (6%) had mild changes in leukocyte counts, which responded rapidly to drug withdrawal. The first fatality from pancytopenia attributable to Nuvarone was reported in a 9-year-old girl by Pearson and co-workers,[7] who referred to an additional nonfatal case called to their attention by a personal communication. The report given below describes the first case to our knowledge of fatal pancytopenia in an adult after Nuvarone therapy.

Report of a Case

A female, aged 37, was admitted to the psychiatric division of Kings County Hospital on July 10, 1954, because of her recent refusal to eat or to care for herself. The patient had been mentally retarded throughout childhood and attended special classes at school from age 12 to 18. Since the age of 18 she had been kept at home and had undergone gradual mental deterioration, particularly marked in the five years prior to admission. During this period she was given a diagnosis of chronic schizophrenia with auditory and visual hallucinations. Ten years before admission periodic episodes began, characterized by shaking all over and pallor, lasting several minutes, without loss of consciousness. These attacks were diagnosed as psychomotor equivalents at a neurological clinic, and she was treated successfully with diphenylhydantoin intermittently for several years. Diphenylhydantoin was given regularly for one year until six months prior to admission, when treatment was discontinued because of severe gingival hyperplasia. Her physician's records showed her to be in good physical health at that time.

Therapy with Nuvarone, given in doses of 0.5 gm. twice a day, was substituted and continued for six months without recurrence of seizures. No other medicament was taken during this period, according to a very careful and reliable history from the family. Despite the physician's advice that she be rechecked periodically, she was not seen again by a physician until the present admission. For a few months before admission, the family noted increased frequency and irregularity of her menses. During the week prior to admission she had completely refused to take her meals.

On examination the patient was found to be a chronically debilitated white female, disoriented and intellectually deteriorated. She appeared anxious and bewildered, answering all questions with "I don't know, there's nothing wrong with me." Occasional auditory and visual hallucinations were noted. The temperature was 98.6 F (37 C), respiratory rate was 20, and the pulse was 92 and regular. The blood pressure was 120/70 mm. Hg. The skin and mucosa were pale, with several ecchymoses noted about the body. A grade 2 soft, blowing apical systolic murmur was present. There were no other positive findings. Blood studies revealed a hemoglobin level of 4 gm. per 100 cc., erythrocytes 1,620,000 per cubic millimeter, and white blood cells 2,350. The peripheral blood smear showed hypochromia, poikilocytosis, and anisocytosis of the erythrocytes. The differential count revealed a predominance of lymphocytes, with no blast forms noted. The platelets were rare. The urinalysis was negative.

The patient was transferred to the medical service the following day, at which time she had become stuporous with a temperature of 102 F (38.9 C). Multiple petechiae were noted over the right antecubital and left shoulder areas. Bleeding was present from the nose, gums, and vagina. Dulness to percussion and inspiratory moist rales were found at the right lung base. Blood cell count showed a hemoglobin level of 3 gm. per 100 cc. and white blood cells, 1,500 per cubic millimeter. A differential smear showed 92% lymphocytes and 8% polymorphonuclears. The platelets were rare. A sternal marrow aspiration smear showed marked hypocellulosity of all elements. The white forms present were predominantly mononuclear, consisting of lymphocytes and occasional plasma cells. No megakaryocytes were seen. The smear was compatible with the diagnosis of aplastic anemia.

She was given 3 pt. (1,419 cc.) of blood and treated with penicillin, streptomycin, cortisone, and corticotropin (ACTH). Hemoglobin level after transfusion was 8 gm. per 100 cc. On the third hospital day the patient was comatose, with a temperature of 105 F (40.5 C). The above therapy was continued. On the fifth hospital day the temperature stayed around 104 F (40 C), and the patient's condition was essentially unchanged. After another pint of blood was given, the hemoglobin level was 9 gm. per 100 cc. The differential smear now showed 90% lymphocytes and 10% polymorphonuclears. No platelets were seen. On the sixth hospital day the temperature was 101.4 F (38.5 C). The pulse rate was 74, and the respiratory rate was 32. The blood pressure was 116/64 mm. Hg. A generalized convulsive seizure was noted, the patient remaining comatose and tachypneic. The skin and mucosa were purpuric. Scattered moist rales were heard throughout both lung fields. Hemoglobin level was 8 gm. per 100 cc. and white blood cells, 970 per cubic millimeter. Therapy was continued as above, with the addition of oxytetracycline, given intravenously. Later in the day, after several tonic convulsive seizures, the blood pressure dropped to shock levels. Bilaterally positive Babinski reflexes were elicited just before the patient died. Blood urea nitrogen level was 23 mg. per 100 cc., carbon dioxide combining power 44 vol. %, chloride 102 mEq., and serum total protein 8.2 gm. per 100 cc., with an albumin-globulin ratio of 3.7-4.5. The Mazzini test was negative. A repeated carbon dioxide combining power determination on the date of death was 44 vol. %.

At autopsy the sternal marrow was found to be aplastic with almost complete absence of red elements. The few white elements present consisted of mononuclear cells. No megakaryocytes or platelets were seen. A massive hemorrhage was present replacing much of the pulmonary parenchyma of the right middle and lower lobes. There were multiple petechial hemorrhages in the pleura, gastrointestinal tract, left renal pelvis, adrenal, uterus, skin, and the oral, anal, nasal, and vaginal mucosa. Bilateral pulmonary congestion, emphysema, and terminal purulent bronchitis were found, along with a small amount of right pleural effusion. In addition to the above, there were noted chronic passive congestion of the liver, intramural and subserosal leiomyomas of the uterus, and slight generalized arteriosclerosis. Consent was not given to examine the head.

From the Department of Hematology, Kings County Hospital.

Comment

It appears definite that Nuvarone, as the sole drug administered to this patient for six months prior to hospital admission, must be incriminated as the causative agent in the development of the fatal pancytopenia. It has been stressed repeatedly that periodic complete blood cell counts are an absolute necessity in following patients on antiepileptic therapy, the offending drugs to be stopped at the first sign of any untoward change.[8] The salient feature of this case is the failure of the family to heed the advice of the physician in this precaution. It is worthy of note, however, that, in the previously reported fatality from Nuvarone,[7] the fatal result occurred despite rigid adherence to monthly blood cell counts. Whether the fatality in the present case could have been averted by such periodic checkups is moot, of course, but the rapid recoveries on drug withdrawal noted from the mild leukopenic changes seen in previous reports on this drug suggest this possibility.

The fact that the initial trials with Nuvarone indicated its relative safety stresses once more the great need for caution in use of new medication that has not received extensive clinical trial. This is even more important when, as is the case with Nuvarone, the chemical nature of the drug is similar to those known to have caused toxic reaction in the past.[9] It is strongly recommended that any potentially or possibly toxic drug given or prescribed be absolutely limited to an interim supply, until the next recommended periodic examination for toxic effects. In this way fatalities such as occurred in this case may be largely avoided.

Summary

The report of a fatal case of aplastic anemia after use of a new antiepileptic preparation, Nuvarone (3-methyl-5-phenylhydantoin), is the second in the literature and the first in an adult. As was seen from review of the previous literature on this drug, earliest reports made note of its lack of hematopoietic toxic reaction. Its chemical nature is similar to other drugs known to have occasional untoward cytopenic effects. Strict adherence to periodic blood cell counts in use of antiepileptic drugs is an absolute necessity. Only interim supplies of potentially toxic drugs should be prescribed between periodic checkups.

451 Clarkson Ave. (Dr. Ginsberg).

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BLOOD VOLUME DETERMINATIONS WITH RADIOACTIVE CHROMIUM (Cr^{51}) LABELED ERYTHROCYTES

FEASIBILITY OF ROUTINE TOTAL RED BLOOD CELL VOLUME DETERMINATIONS IN A GENERAL HOSPITAL

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With the introduction of $Na_2Cr^{51}O_4$ as a label for red blood cells [1] and the observation that ascorbic acid prevents further uptake of radiochromium (Cr^{51}) by erythrocytes,[2] a plan suggested itself whereby routine total red blood cell volume determinations could be performed in a small general hospital.

Material and Methods

Each morning 50 ml. of fresh (24-48 hours old) group O Rh-negative blood, preserved in acid-citrate-dextrose mixture (this is enough for four patients), was withdrawn from the hospital blood bank and incubated with 250 μc of $Na_2Cr^{51}O_4$ for one hour at 37 C, with shaking at infrequent intervals. At the end of this period 10 ml. of sterile isotonic sodium chloride solution and 50 mg. of ascorbic acid was added and the mixture gently rotated for five minutes. Hematocrit determinations were made in triplicate with the International capillary hematocrit centrifuge. Ten milliliters of labeled blood was diluted with water to 1,000 ml. in the appropriate volumetric flask. An equal amount was injected intravenously into each subject. One milliliter of supernatant fluid of the labeled mixture was diluted with water to 100 ml. in a volumetric flask (to calculate Cr^{51} activity not attached to erythrocytes). Twenty minutes after injection, 10 ml. of blood was removed from the subject, oxalated, hematocrit determinations made, and radioactivity of whole blood and plasma estimated. (If patient had previous blood volume studies, radioactivity of background blood was subtracted from whole-blood sample value.) Correcting for radioactivity not tagged to red blood cells before injection and in plasma after the 20-minute period, total blood volume was calculated. From the venous hematocrit, total red blood cell and plasma volumes were derived. All measurements were made by diluting 1 ml. of sample with an equal volume of water in a 4 ml. vial, using a well-type scintillation counter. Samples were pre-

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The $Na_2Cr^{51}O_4$ used in this study was obtained from Abbott Laboratories, North Chicago, Ill., on allocation from the Isotopes Division, Atomic Energy Commission, Oak Ridge, Tenn.

Janet Portmore gave technical assistance in this study.

Dr. Nathaniel I. Berlin gave advice and made suggestions in this study.

pared in triplicate and counted for five minutes each. No correction was made for trapped plasma or body hematocrit. Ideal total red blood cell volumes were calculated on the basis of 30 ml. per kilogram for males, 28 ml. per kilogram for females, and plasma volumes of 38 ml. per kilogram for both.[3]

Table 1 summarizes the results of multiple blood determinations performed on 10 male and female volunteers. Percentage differences were derived by dividing

TABLE 1.—*Multiple Blood Volume Determinations Performed on Ten Male and Female Volunteers by Use of Radioactive Chromium*

Subject					Total Blood Volume		Total Plasma Volume		Total Red Blood Cell Volume		
Age, Yr.	Sex	Date, 1955	Weight, Kg.	Hematocrit	Total Ml.	Ml./Kg.	Total Ml.	Ml./Kg.	Total Ml.	Ml./Kg.	Difference, %
49	M	1/22	74	50.0	4,200	56.7	2,100	28.3	2,100	28.4	...
		1/26	74	48.0	4,371	59.2	2,273	31.8	2,098	28.4	...
32	M	1/27	63	47.0	4,643	73.7	2,461	39.1	2,182	34.6	...
		2/4	63	48.0	4,559	72.3	2,371	37.7	2,188	34.6	...
30	M	11/23/54	66	48.5	4,780	72.4	2,464	37.3	2,316	35.1	...
		11/24/54	66	48.0	4,700	71.2	2,500	37.0	2,200	34.2	2.2
		2/4	66	47.5	4,972	75.3	2,610	39.6	2,362	35.7	2.2
53	M	2/12	54	43.0	3,542	65.6	2,019	37.4	1,523	28.2	1.4
		2/14	54	42.0	3,608	66.8	2,093	38.7	1,515	28.1	2.2
		2/16	54	43.0	3,748	69.4	2,136	39.5	1,612	29.9	4.0
42	F	1/24	60	37.5	3,424	57.1	2,140	35.7	1,284	21.4	...
		1/25	60	37.0	3,483	58.1	2,195	36.7	1,288	21.4	...
40	F	1/17	62	40.0	3,214	51.8	1,928	31.1	1,286	20.7	...
		1/18	62	41.0	3,094	49.8	1,726	29.4	1,268	20.4	...
43	F	1/18	53	43.0	3,599	67.9	2,051	38.7	1,548	29.2	...
		1/19	53	43.5	3,060	69.1	2,068	39.0	1,592	30.1	3.1
		1/21	53	43.5	3,426	64.5	1,936	36.4	1,490	28.1	3.4
45	F	1/24	55	40.5	2,925	53.2	1,740	31.7	1,185	21.5	3.1
		1/27	55	41.5	2,729	49.6	1,596	29.0	1,133	20.6	2.2
58	F	1/15	62	37.0	2,796	45.1	1,762	28.4	1,034	16.7	3.8
		1/17	62	37.0	2,808	45.3	1,769	28.6	1,039	16.7	3.3
		1/26	62	37.0	3,112	50.2	1,961	31.7	1,151	18.5	7.0
69	F	2/12	99	42.5	5,626	56.8	3,235	32.7	2,391	24.1	...
		2/21	99	41.0	5,832	58.8	3,441	34.7	2,391	24.1	...

TABLE 2.—*Total Blood Volume of a Thirty-Seven-Year-Old Woman Determined by Radioactive Chromium*

Subject	Date, 1955	Weight, Kg.	Hematocrit	Total Blood Volume		Total Plasma Volume		Total Red Blood Cell Volume		Diagnosis and Clinical Notes	Treatment
				Total Ml.	Ml./Kg.	Total Ml.	Ml./Kg.	Total Ml.	Ml./Kg.		
Ideal	....	53	45	3,498	66.0	2,014	38.0	1,484	28.0		
Case 1	1/8	53	24	2,850	55.6	2,240	42.2	710	13.4	Bleeding duodenal ulcer	500 ml. whole blood
	1/9	..	..	.....	....	.....	....	.....	....	.....	500 ml. whole blood
	1/10	53	29	2,821	53.2	2,002	37.8	819	15.4	Stool 4+ radioactivity	1,000 ml. whole blood
	1/11	..	..	.....	....	.....	....	.....	....	.....	500 ml. whole blood
	1/12	53	45	3,147	59.4	1,731	32.7	1,416	26.7		
	1/15	53	45	3,323	62.7	1,828	34.5	1,495	28.2		

TABLE 3.—*Total Blood Volume of a Sixty-Seven-Year-Old Woman Determined by Radioactive Chromium*

Subject	Date, 1955	Weight, Kg.	Hematocrit	Total Blood Volume		Total Plasma Volume		Total Red Blood Cell Volume		Diagnosis and Clinical Notes	Treatment
				Total Ml.	Ml./Kg.	Total Ml.	Ml./Kg.	Total Ml.	Ml./Kg.		
Ideal	....	56	45	3,696	66.0	2,128	38.0	1,568	28.0		
Case 2	2/10	56	44	2,898	51.7	1,681	30.0	1,217	21.7	Bleeding duodenal ulcer	500 ml. whole blood
	2/11	56	29	2,622	46.8	1,562	27.9	1,060	18.9	Stool 4+, radioactivity	1,000 ml. whole blood
	2/12	56	29	2,433	43.4	1,727	30.8	706	12.6	Gastrectomy	1,000 ml. whole blood
	2/13	..	..	.....	....	.....	....	.....	....	.....	1,000 ml. whole blood
	2/14	56	43.5	3,089	55.1	1,745	31.1	1,344	24.1	.....	500 ml. whole blood
	2/15	56	45	3,173	56.6	1,746	31.1	1,428	25.5		

the difference between a single determination and the mean by the mean. Our results are in agreement with those of Read,[2] who found differences in red blood cell volume in the same subject to vary up to 9% in some instances. Evaluation of the method as it applies in clinical practice can best be illustrated by the following cases.

Report of Cases

CASE 1.—A 37-year-old female was admitted to the hospital on Jan. 8, 1955, with evidence of bleeding from a duodenal ulcer (table 2). Hematocrit was 24; total red blood cell volume estimated by Cr^{51} technique was 710 ml. (ideal 1,484 ml.). She was transfused with 500 ml. of whole blood on Jan. 8 and 9. The following day the hematocrit was 29 and the patient appeared clinically improved. The red blood cell volume had increased to only 819 ml. in spite of transfusions of 1,000 ml. of whole blood (approximately 420 ml. of red blood cells). That afternoon stool examination revealed a high level of radioactivity, indicating gastrointestinal bleeding after the injection of labeled erythrocytes. She received 1,000 ml. of whole blood on Jan. 10 and 500 ml. the following day. On Jan. 12 the hematocrit was 45 and red blood cell volume 1,416 ml. Accepting an average hematocrit of bank blood of 42, the total red blood cell volume determination of Jan. 12 (1,416 ml.) was within the range of estimated volume of 1,449 ml. (819 plus 630 ml.). Another red blood cell determination the following day was 1,495 ml. This was within the observed error of the method and further indicated none or no significant gastrointestinal bleeding.

CASE 2.—A 67-year-old female was admitted to the hospital on Feb. 10, 1955, because of severe hemorrhage from a gastric ulcer (table 3). Hematocrit was 44 and red blood cell volume 1,217 ml. (ideal 1,568 ml.). That afternoon she was transfused with 500 ml. of whole blood. The following day the hematocrit

had fallen to 29 and red blood cell mass to 1,060, a loss of approximately 367 ml. of erythrocytes (157 ml. plus 210 ml. in 500 ml. of transfused whole blood). Her stool that day was strongly radioactive, indicating hemorrhage after injection of tagged red blood cells the day before. One thousand milliliters of blood was administered. On Feb. 12 the hematocrit was still 29 but red blood cell volume had fallen to 706 ml., a loss of about 770 ml. of erythrocytes (350 ml. plus 420 ml. in 1,000 ml. of transfused whole blood). The patient showed clinical evidence of blood loss. She received 2,000 ml. of whole blood within 24 hours. Gastrectomy was performed. On Feb. 14 hematocrit was 43.5 and red blood cell volume 1,344 ml. This would imply a loss of about 200 ml. of red blood cells from the time of determination of red blood cell volume before gastrectomy and two days after operation. She received 500 ml. of whole blood on Feb. 14. Hematocrit on Feb. 15 was 45 and erythrocyte volume 1,428 ml.

CASE 3.—A 44-year-old female was admitted to the hospital on Feb. 8, 1955, for splenectomy because of kerasin-type lipid histiocytosis (Gaucher's disease) complicated by thrombocytopenic purpura (table 4). Hematocrit was 37 and red blood cell volume 1,089 ml. (ideal 1,372 ml). She received 500 ml. of whole blood that afternoon and another 500 ml. the following day when splenectomy was performed. On Feb. 11, hematocrit was 42 but total red blood cell volume was 1,003 ml., indicating a loss of approximately 480 ml. of erythrocytes as a result of operation and blood in the organ (weight 440 gm.). She received 500 ml. of whole blood the following day. Two and five days later the red blood cell volumes were 1,471 and 1,534 ml. respectively. A plausible interpretation for the high values, over and above the amount of cells transfused, is that prior to operation there was a considerable increase in rate of red blood cell formation due to hemolysis of erythrocytes based on the hypersplenic state. After splenectomy, the bone marrow continued to produce, at least for a few days, an excessive number of red blood cells, even though increased hemolysis no longer existed.

CASE 4.—A 60-year-old male was admitted to the hospital on March 4, 1955, because of hemorrhage from a duodenal ulcer (table 5). Hematocrit was 35.5 and red blood cell volume 1,719 (ideal 2,700 ml.). He received 2,000 ml. of whole blood during the next three days. Stool examinations on March 5, 6, and 7 received no radioactivity. Hematocrit on March 7 was

TABLE 4.—*Total Blood Volume of a Forty-Four-Year-Old Woman Determined by Radioactive Chromium*

Subject	Date, 1955	Weight, Kg.	Hematocrit	Total Blood Volume		Total Plasma Volume		Total Red Blood Cell Volume		Diagnosis and Clinical Notes	Treatment
				Total Ml.	Ml./Kg.	Total Ml.	Ml./Kg.	Total Ml.	Ml./Kg.		
Ideal	....	49	45	3,234	66.0	1,862	38.0	1,372	28.0		
Case 3	2/8	49	37	2,914	60.0	1,855	37.8	1,089	22.2	Kerosin-type lipid histiocytosis (Gaucher's disease) with thrombocytopenic purpura	500 ml. whole blood
	2/9	..	..	.....	....	.....	....	.....	....	.....	500 ml. whole blood; splenectomy
	2/11	49	42	2,387	48.7	1,384	28.3	1,003	20.4		
	2/12	..	..	.....	....	.....	....	.....	....	.....	500 ml. whole blood
	2/14	49	44	3,343	68.2	1,872	38.2	1,471	30.0		
	2/17	49	45.5	3,371	68.7	1,837	37.4	1,534	31.3		

TABLE 5.—*Total Blood Volume of a Sixty-Year-Old Man Determined by Radioactive Chromium*

Subject	Date, 1955	Weight, Kg.	Hematocrit	Total Blood Volume		Total Plasma Volume		Total Red Blood Cell Volume		Diagnosis and Clinical Notes	Treatment
				Total Ml.	Ml./Kg.	Total Ml.	Ml./Kg.	Total Ml.	Ml./Kg.		
Ideal	....	90	45	6,120	68.0	3,420	38.0	2,700	30.0		
Case 4	3/4	90	35.5	4,841	53.8	3,122	34.7	1,719	19.1	Bleeding duodenal ulcer	
	3/4-3/6	..	..	.....	....	.....	....	.....	....	.....	2,000 ml. whole blood
	3/5	..	..	.....	....	.....	....	.....	....	Stool negative for radioactivity	
	3/6	..	..	.....	....	.....	....	.....	....	Stool negative for radioactivity	
	3/7	..	..	.....	....	.....	....	.....	....	Stool slight radioactivity	
	3/7	90	48	5,310	59.0	2,761	30.7	2,549	28.3		

TABLE 6.—*Total Blood Volume of a Sixty-One-Year-Old Man Determined by Radioactive Chromium*

Subject	Date, 1955	Weight, Kg.	Hematocrit	Total Blood Volume		Total Plasma Volume		Total Red Blood Cell Volume		Diagnosis and Clinical Notes	Treatment
				Total Ml.	Ml./Kg.	Total Ml.	Ml./Kg.	Total Ml.	Ml./Kg.		
Ideal	....	80	45	5,440	68.0	3,040	38.0	2,400	30.0		
Case 5	2/21	80	35	3,025	37.7	1,966	24.5	1,059	13.2	Bleeding duodenal ulcer	500 ml. whole blood
	2/22	..	..	.....	....	.....	....	.....	....	.....	500 ml. whole blood
	2/23	80	41	3,463	43.2	2,043	25.5	1,420	17.7		

TABLE 7.—*Total Blood Volume of a Forty-Two-Year-Old Man Determined by Radioactive Chromium*

Subject	Date, 1955	Weight, Kg.	Hematocrit	Total Blood Volume		Total Plasma Volume		Total Red Blood Cell Volume		Diagnosis and Clinical Notes	Treatment
				Total Ml.	Ml./Kg.	Total Ml.	Ml./Kg.	Total Ml.	Ml./Kg.		
Ideal	....	59	45	4,012	68.0	2,242	38.0	1,770	30.0		
Case 6	2/17	59	37	3,741	63.3	2,357	39.9	1,384	23.4	Chronic gastritis	
	2/18	..	..	.....	....	.....	....	.....	....	.....	500 ml. whole blood
	2/19	..	..	.....	....	.....	....	.....	....	.....	500 ml. whole blood
	2/21	59	41.5	4,291	72.7	2,510	42.5	1,781	30.2		

48 and red blood cell mass 2,549 ml. On the basis of erythrocyte volume at time of admission and transfusion of 2,000 ml. of whole blood (estimated 840 ml. of erythrocytes), the value observed accurately reflected the anticipated result of 2,559 ml. (1,719 plus 840). It is significant that, although the hematocrit was 48, the red blood cell volume (2,549 ml.) was less than the calculated ideal of 2,700 ml.

CASE 5.—A 61-year-old male was admitted to the hospital on Feb. 21, 1955, because of hemorrhage from a duodenal ulcer (table 6). Hematocrit was 35 and red blood cell volume 1,059 ml. (ideal 2,400 ml.). He was transfused with 500 ml. of blood on Feb. 21 and 22. The following day the hematocrit was 41 and erythrocyte volume 1,420 ml., which compares favorably with the anticipated 1,479 ml. (1,059 and 420 ml.). It is significant that with a calculated deficit of 980 ml. of red blood cells the hematocrit was 41. Further transfusions resulted in a complete recovery of this patient.

CASE 6.—A 42-year-old male was admitted to the hospital for carcinoma of stomach (table 7). At operation a nonspecific granuloma of gastric wall was found. Postoperatively hematocrit was 37 and red blood cell volume 1,384 (ideal 1,770 ml.). He received 500 ml. of whole blood on Feb. 18 and 19. Two days later the hematocrit was 41.5 and erythrocyte volume 1,781 ml. The anticipated volume was 1,804 ml. (1,384 plus 420 ml.). The low hematocrit value was due to increased plasma volume. The observed red blood cell volume of 1,781 compared favorably with estimated ideal of 1,770 ml.

Comment

More than 250 blood volume determinations were performed, with $Na_2Cr^{51}O_4$ used as a tag for erythrocytes. When the blood grouping of patients was known and all were Rh positive, group O cells of this type were used, as they were more generally available. If the subjects included both Rh-positive and Rh-negative groups, then only group O Rh-negative cells were labeled. No untoward reactions were observed.

The foregoing clinical applications are only a few examples of the service that this technique offers in the proper evaluation and management of patients after operation and those who are or have been bleeding. The hematocrit determination as estimated from blood taken from a peripheral vein is notoriously a poor index of the amount of red blood cells in the body. This is well shown in case 1, where the hematocrit rose from 24 to 29 but the red blood cell volume increased only 109 ml., despite transfusion of 420 ml. of erythrocytes. Further proof of loss of blood was the high radioactivity of stool, indicating gastrointestinal bleeding that included cells tagged with Cr^{51}. Case 2 also illustrates the fallacy of evaluating the hematological status from the venous hematocrit. In this patient, the hematocrit remained stationary at 29 for two consecutive days, even though there was a calculated loss of 770 ml. of red blood cells; stools were highly radioactive, showing gastrointestinal bleeding of tagged cells; and there was clinical evidence of blood loss. By transfusing the necessary amount of blood and removal of the gastric ulcer the patient made a complete recovery. Case 4 illustrates a patient who, after transfusion of 2,000 ml. of whole blood, showed a hematocrit of 48 but a red blood cell volume slightly below the ideal for his weight. Numerous patients, particularly while being prepared for surgery, showed a hematocrit over 45 and were anemic rather than normal by blood volume standards. This was due to lowered plasma volume and not to increased total red blood cell volume. Case 5 is another example of severe red blood cell deficit of 980 ml. and a hematocrit of 41 due to decreased plasma volume.

The close correlation of anticipated red blood cell volumes after transfusions of blood when there is no further evidence of bleeding, with use of an estimated 420 ml. of red blood cells per 1,000 ml. of whole bank blood, warrants the continued use of this technique for the proper evaluation of the red blood cell status of the patient.

Summary

Utilizing fresh group O Rh-negative blood tagged with $Na_2Cr^{51}O_4$, multiple red blood cell volume determinations on normal subjects were calculated with differences of less than 4%. This technique was applied to patients undergoing extensive surgery or suffering from bleeding; the erythrocyte volume was assessed, and the deficit was replaced as indicated. Measurement of stool radioactivity helped to determine the time of onset and cessation of gastrointestinal hemorrhage.

43 S. Lewis Pl.

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LEGGING FOR LOWER EXTREMITY SKIN TRACTION

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and
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Skin traction on the lower extremity is commonly used for femoral and pelvic fractures, treatment of low back strain, ruptured lumbar intervertebral disks, osteochondrosis of capital epiphysis of femur (Legg-Perthes disease), and a variety of other back and hip disorders. The proper application of the conventional adhesive straps or foam rubber strips, with elastic bandage compression, requires a moderate amount of experience and technical ability. It would be desirable to have a safe, effective skin traction device that could be applied by relatively untrained hospital personnel, ambulance drivers, and patients. This is especially true when traction is to be used intermittently or in the patient's home.

Any device used for skin traction must adhere securely to the skin over an area wide enough to withstand the longitudinal pull that will tend to displace it in an axial direction. Moleskin or canvas-backed foam rubber strips, held under the compressive force of an elastic bandage and covering a skin surface of 50 to 100 sq. in., about two-thirds the surface of an average adult's calf, give enough adhesion to withstand 8 to 10 lb. of continuous traction. Foam rubber derives its adhesive effect from tiny pores in the material, which exert a suction-cup action against the skin. In untrained hands, this type of traction is apt to be applied incorrectly, making it uncomfortable or ineffective.

We have devised a simple one-piece traction legging of foam rubber and elastic corset material with attached straps and buckles, which can be applied by patients or other untrained persons with a minimum of instruction and negligible risk. We have used this traction legging over a period of five years on approximately 1,000 patients, both at home and in the hospital, with satisfactory

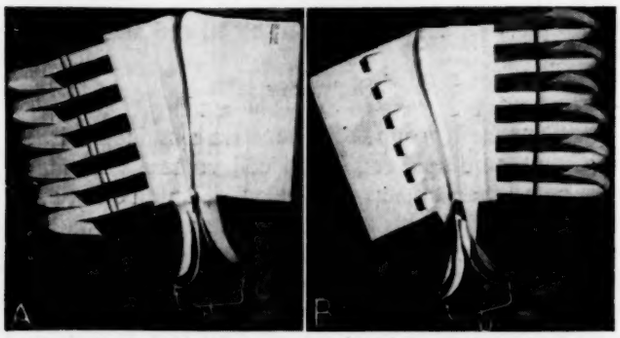

Fig. 1.—Anderson traction legging, *A*, inside and, *B*, outside views, spreader attached.

results. We have been pleased with the ease and simplicity of its use. In no instance have we observed any serious skin, nerve, or vascular complications, despite the fact that in 90% of the cases the traction was applied by patients or by unskilled hospital aides.

The legging has been modified on several occasions as our experience indicated. Earlier models were found to have too little shaping and too much elasticity. The present models have eliminated these faults. There is a wide range of shapes and sizes of legs. By gradually altering the size of the legging, we have arrived at three sizes that cover the range of leg sizes quite adequately.

Description and Use

The traction legging (fig. 1) consists of a single unit composed of foam rubber bonded to nylon corset material with a two-way stretch elastic insert to provide compression and to allow for minor variations in the

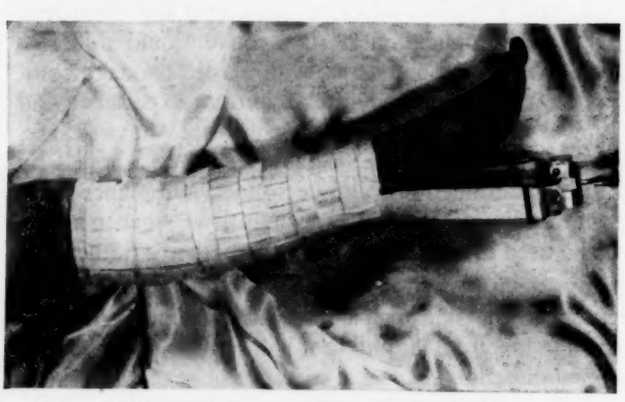

Fig. 2.—Traction legging in use. Note that proximal end of legging lies at patella.

shape of the leg. The legging is held in place by a series of buckles attached to the legging. These rest over a tongue of foam rubber when the legging is in place. A webbing strip on either side of the legging provides the point of attachment for a spreader. The conventional metal spreader with a 4-in. bar is recommended.

Application of the legging is a simple matter. The proper size should be selected—small adult, large adult, or the child's size. The leg is placed on the legging with the upper edge of the legging at the level of the patella (fig. 2). The buckles are then fastened under moderate tension. The tension may be readily adjusted by altering the position of the buckles. The spreader is then attached and the desired weight applied over a pulley. No skin adherent and no padding of the bony prominences is required. Direct pressure of the foam rubber on the bare skin of the leg is all that is required. The skin of the leg should not be treated with powder.

The most frequent difficulty arises from placing the legging too far distally. This allows the legging to slip, and pressure occurs over the malleoli, tendo achilles, or anterior ankle surface. It should be remembered that the traction legging should adhere to the skin of the entire upper calf and that no pull or pressure should occur about the ankle or foot. Placement of the top of the legging at the level of the patella will obviate this difficulty.

Complications

Although we have had no serious complications, any use of skin traction requires careful observation to avoid peroneal nerve pressure, severe calf compression with vascular impairment, and pressure over the bony prominences resulting in skin necrosis. It is our belief that use of the traction legging will be less attended by complications of this type, because of its ease of application and adjustment, as compared with conventional traction mediums.

Conclusions

A simple one-piece legging for lower extremity skin traction has been used over a five-year period in 1,000 cases with satisfactory results and no serious complications. The traction legging is recommended for use in any low back, pelvic, or lower extremity condition requiring skin traction. There are three main advantages of the traction legging over conventional skin traction devices. 1. It is a one-piece unit, eliminating the need for a variety of materials. 2. Simplicity of application and adjustment permits application by unskilled persons. 3. There is relative freedom from serious complications.

1150 Montgomery Dr. (Dr. Anderson).

Gram-Negative Bacteremia.—The gram-negative bacillus which most commonly invades the blood stream is Escherichia coli. E. coli and Aerobacter aerogenes, considered together as the "coli-aerogenes group," were the invaders in 100 of . . . 137 cases of bacteremia due to gram-negative bacilli. . . . The site of origin of the bacteremia was the genitourinary tract in 60% of the cases and the gastrointestinal tract in 25%. In about 50% of the cases an operative procedure immediately preceded the infection; in about a third of the cases associated with surgical procedures the operation had been on the gastrointestinal tract, and in about two thirds it had been on the genitourinary tract. Treatment with one of the tetracycline group of compounds combined with streptomycin was highly efficacious, except when the causative organism was Ps. aeruginosa. In bacteremia due to pseudomonas organisms, use of polymyxin B appears to be justifiable.—J. A. Spittel Jr., M.D., W. J. Martin, M.D., and D. R. Nichols, M.D., Bacteremia Owing to Gram-Negative Bacilli: Experiences in the Treatment of 137 Patients in a 15-Year Period, *Annals of Internal Medicine*, February, 1956.

DIAGNOSTIC PROBLEMS

PRESENTATION OF CASE

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A 77-year-old man entered Barnes Hospital on Aug. 4, 1955, complaining of chronic diarrhea, anemia, and skin infections. Two years earlier, at another hospital, he underwent a suprapubic prostatectomy without complications. On this occasion, an asymptomatic anterior mediastinal mass was observed in a roentgenogram of the chest and the peripheral blood was reported to be normal. The diarrhea, first noted in May, 1955, was characterized by the passage of frequent loose stools without blood or mucus and not associated with abdominal pain. The patient was hospitalized, and both the red and white blood cell counts were found to be low. He was given several blood transfusions and a course of combined diiodohydroxyquinoline (Diodoquin)-carbarsone therapy, without effect on the diarrhea. In July he noted the progressive onset of weakness, gradual weight loss, superficial infections of the skin in the axillary and nuchal regions, and a persistent cough moderately productive of yellow, nonbloody sputum. He was then transferred to Barnes Hospital for further study.

Physical Examination.—The patient was a rather obese, elderly man who was quite weak and appeared both acutely and chronically ill. Several small furuncles were noted on the face and neck, and a tender abscess, measuring 3 by 4 cm., was palpable in the right axilla. Other significant physical findings included dulness to percussion over the upper mediastinum, a firm liver edge extending 2 cm. below the right costal margin, and a palpable splenic tip. Initial laboratory data indicated a red blood cell count of 2,970,000 per cubic millimeter, with a hemoglobin level of 8.5 gm. per 100 ml. The white blood cell count was 650 per cubic millimeter. A preponderance of lymphocytes and an occasional nucleated red blood cell were noted on the blood film. The platelet count was 349,000 per cubic millimeter, and the reticulocyte count was 1.9%. Richly cellular marrow was aspirated with ease from the sternum (fig. 1). A relative increase in mature granulocytes was observed with a striking erythroblastic hypoplasia. The megakaryocytes appeared normal. No eosinophilic granulocytes or plasma cells could be found. The differential count was: segmented neutrophils 20%, band forms 11%, metamyelocytes 23%, "C" myelocytes 30%, "B" myelocytes 2%, and lymphocytes 14%. There were 14 normoblasts (orthochromatophilic normoblasts) and one late erythroblast (polychromatophilic normoblast) per 100 white blood cells. The total serum protein level was 4.0 gm. per 100 ml. (2.9 gm. albumin and 1.1 gm. globulin). Filter paper electrophoresis of the serum proteins indicated almost complete absence of gamma globulin. A roentgenogram of the chest revealed a homogenous mass, measuring 10 by 10 cm., with clearly demarcated borders occupying the upper anterior mediastinum adjacent to the pectoral and lingular segments of the upper lobe of the left lung.

Course.—The patient had a daily temperature elevation to 39.8 C (103.6 F). Blood culture was sterile, and the administration of tetracycline did not reduce the fever. On the sixth day of hospitalization, daily intramuscular injections of 4 ml. of gamma globulin were instigated. Following this, there was seen a prompt disappearance of the diarrhea and the skin infections began to subside. Supportive blood transfusions were given to elevate the hemoglobin level, but the total leukocyte count remained at severely leukopenic levels. On Aug. 8, a needle biopsy of the mediastinal mass was performed. The specimen exhibited fragments of cellular tumor tissue composed of spindle cells and cells resembling lymphocytes. The tumor was believed to be a thymoma, and, with the hematological changes noted in the bone marrow aspiration, attention was focused on a possible relationship between the two findings. A neurological consultant found no evidence of myasthenia gravis, and the patient responded normally to provocative testing with neostigmine (Prostigmin), edrophonium (Tensilon), and tubocurarine chloride. On Aug. 19, he underwent thoracotomy, at which time a large, firm, encapsulated tumor was removed from the anterior mediastinum without difficulty. Although the patient's condition appeared to be satisfactory during the immediate postoperative period, his blood pressure slowly fell to shock levels, and he died 20 hours after operation, having failed to respond to the transfusions and vasopressor substances.

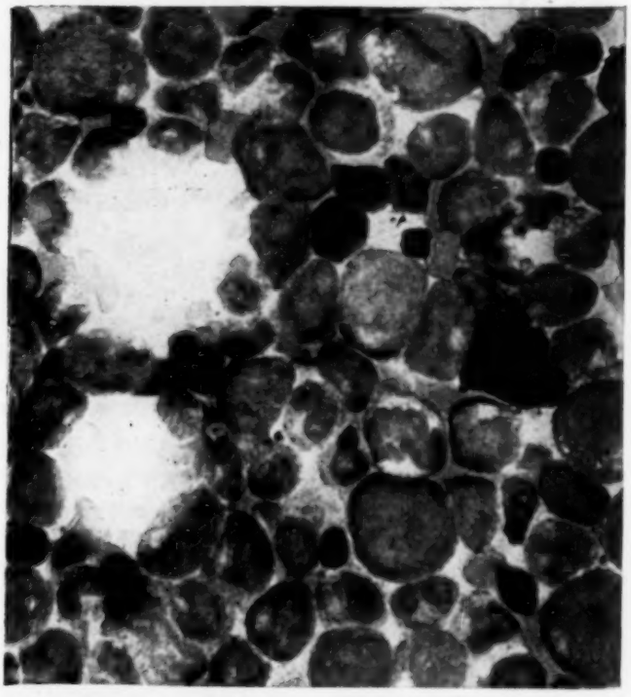

Fig. 1.—Sternal bone marrow aspirate showing relative hyperplasia of myeloid cells and almost complete absence of nucleated red blood cells and plasma cells. Wright's stain (× 670).

The surgical specimen consisted of a tumor that weighed 435 gm. and measured 13 by 9.7 by 6.5 cm. The external surfaces were pink-tan, smooth, and slightly lobulated, with a few scattered petechiae and ecchymoses.

From the Department of Surgical Pathology, Washington University School of Medicine.

The autopsy was performed by Dr. J. Skinner, Department of Pathology, Washington University School of Medicine.

The tumor was surrounded by a thin but well-formed fibrous capsule and was uniformly firm. Transections revealed pale tan to pink-tan, occasionally mottled yellow, and lobulated surfaces that bulged beyond the edges of the capsule. The lobules were of varying size, the largest measuring 4 cm. in greatest diameter, separated by glistening fibrous tissue trabeculae. Surrounding the largest lobule was a narrow rim of fairly recent hemorrhage that

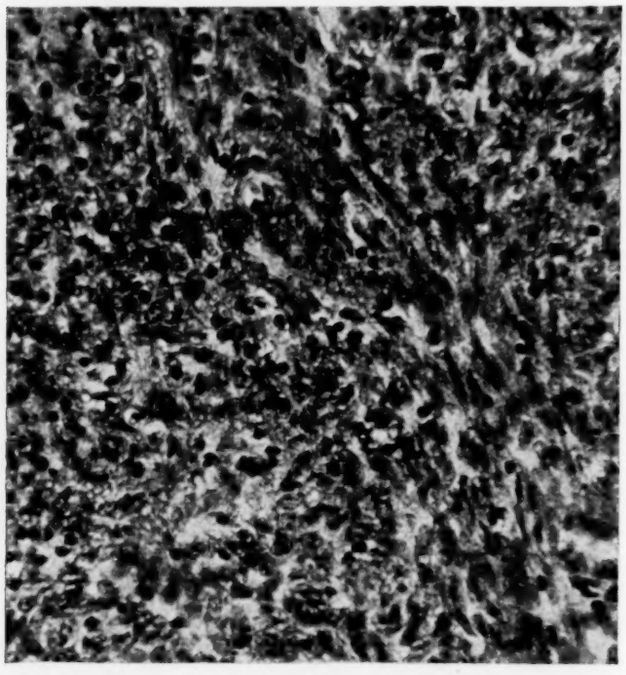

Fig. 2.—Thymoma exhibiting spindle-shaped and more rounded epithelial cells, with few scattered lymphocytes. Hematoxylin and eosin (× 300).

extended to the neighboring lobules. An area of cyst formation 2 cm. in diameter with multiloculations was also present adjacent to the largest lobule. Microscopically (fig. 2), this thymic tumor exhibited a prominent lobular pattern traversed by broad bands of loose, fibrous connective tissue trabeculae containing islands and nests of cellular tumor tissue and extravasated erythrocytes. For the most part, it was composed of spindle-shaped and more rounded epithelial cells that formed ill-defined cords and whorls with scattered admixture of lymphocytes in varying numbers. In other areas, abundant lymphocytes were present amid a sparse distribution of epithelial cells containing large, pale, ovoid nuclei that were notched or indented. Mitotic figures were occasionally seen. Areas displaying pseudoacinar and cystic formations were also noted. The gross features and histological pattern of the thymoma did not suggest malignant change,[1] but Castleman has stated that there is rarely any microscopic difference between thymomas that remain encapsulated and those that spread within the mediastinum. He has also noted that myasthenia gravis is infrequently associated with thymomas in which spindle cells predominate.[2]

Anatomic Diagnosis

There was an ulcer, measuring 2 cm. in diameter, with purulent exudate in the right axilla. Two shallow, flat-based ulcers on each side of the hard palate were present. No superficial lymph node enlargement was noted. An estimated 500 ml. of clotted blood was present in the anterior mediastinum and left hemithorax. The site of operation showed no residual tumor, there were no enlarged mediastinal lymph nodes, and the lungs did not appear abnormal. The spleen was purple-red and moderately soft, weighed 730 gm., and measured 18 by 13 by 5 cm. There were dense fibrous adhesions between the spleen and the diaphragm and the splenic flexure of the colon. The normal architecture of its cut surfaces on section appeared to be obliterated. The ribs and vertebrae (thoracic and lumbar) exhibited red and moderately firm marrow.

Microscopic Findings.—The sections of the vertebrae and ribs revealed a richly cellular marrow, but several islands of fatty marrow were also present. Although a few erythrocytic progenitors were seen, most of the cells represented those of the granulocytic series, and mitotic figures were frequent. Lymphocytes were also increased in number, forming scattered aggregates in many areas, this finding being more conspicuous in the marrow sections of the ribs. The reticulum cells were also increased. An occasional plasma cell was seen only after prolonged search. The megakaryocytes appeared decreased in number. The spleen (fig. 3) showed fairly numerous, ill-defined foci of extramedullary hematopoiesis amid a markedly congested pulp containing scattered deposits of hemosiderin. The sinusoids were filled with a mixture

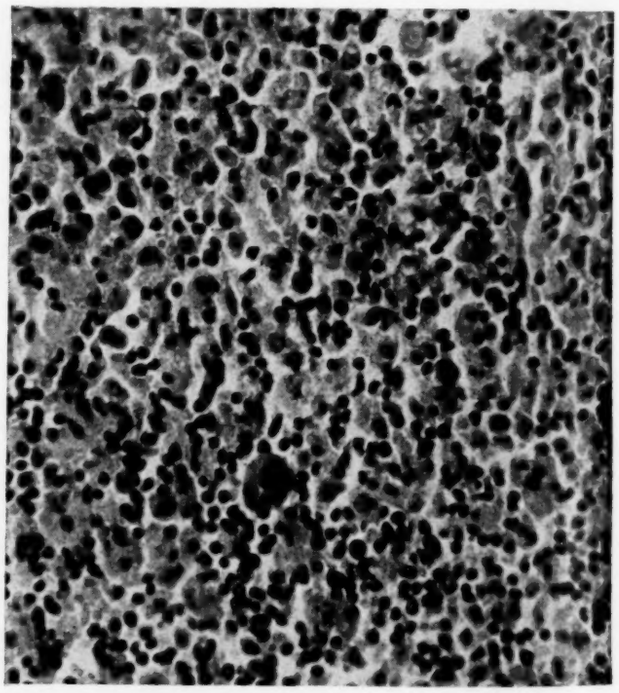

Fig. 3.—Section of spleen showing extramedullary hematopoiesis. Hematoxylin and eosin (× 340).

of histiocytes and lymphocytes, and the littoral cells appeared prominent. Erythrophagocytosis and large, bizarre reticulum cells were also found. No fibrosis was discernible. There were slight aggregates of lymphocytes and monocytes in the periportal areas of the liver. No plasma cells were seen in any of the tissue sections.

Anatomic Diagnoses.—Unhealed wound left lateral thoracic wall; clotted blood in anterior mediastinum and

left hemithorax; splenomegaly with extramedullary hematopoiesis; slight congestion of lungs; slight fatty metamorphosis of liver; arteriosclerosis of the aorta with ulceration, moderate, and of the renal and coronary arteries, slight; moderate arteriolar nephrosclerosis; calcified mitral ring; testicular atrophy; hydrops of the gallbladder with cholelithiasis and stone impacted in cystic duct; and multiple fibrous adhesions in the peritoneal cavity.

1. (*a*) Castleman, B.: Tumors of the Thymus Gland, in Atlas of Tumor Pathology, section 5, fascicle 19, Washington, D. C., Armed Forces Institute of Pathology, 1955. (*b*) Seybold, W. D.; McDonald, J. R.; Clagett, O. T., and Good, C. A.: Tumors of the Thymus, J. Thoracic Surg. **20**: 195-215 (Aug.) 1950.

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COMMENT

Virgil Loeb Jr., M.D., St. Louis

There are several facets of this case that pose problems of more than theoretical interest. One may speculate on a conceivable relationship between the tumor of the thymus and the erythroblastic hypoplasia or "aregenerative" anemia, the neutropenia, plasmacytopenia, and the severe hypogammaglobulinemia on the basis of reports of various combinations of two or more of these isolated abnormalities occurring in the same patient. Examples of erythroblastic hypoplasia associated with thymic tumors are becoming more familiar; Weinbaum and Thompson have surveyed the literature on this subject.[1] The simultaneous occurrence of plasmacytopenia and neutropenia with agammaglobulinemia has been emphasized by Good and Varco in a summary of much of the published data pertaining to this abnormality of protein synthesis.[2] The patient here described presented a unique syndrome in which the cardinal features included (1) the presence of a benign thymoma of at least two years' duration, (2) development of a severe neutropenia and anemia that became manifest about a year after the tumor was observed, (3) a tendency to diarrhea and superficial skin infections, (4) laboratory evidence of severe hypogammaglobulinemia, (5) splenomegaly, and (6) histological findings of erythroblastic and plasmacytic aplasia in the bone marrow and absence of plasma cells in tissues studied at autopsy.

Good and Varco described one patient in whom agammaglobulinemia and a tumor of the thymus coexisted and whose protein abnormality was not affected by removal of the tumor.[2] This patient did not have a deficiency of red blood cells or neutrophils, but plasma cells and eosinophils were absent from the bone marrow. These investigators postulated that patients with agammaglobulinemia basically have a "failure of heteroplastic maturation of the reticulum," with which may be associated neutropenia, eosinopenia, thymic tumor, reticulum cell proliferation, and deficiency of plasmacellular development from reticulum. If this, in fact, is correct, it might be predicted that some patients with agammaglobulinemia would have an associated deficiency of erythrocyte precursors such as was noted in the present patient. The baffling association of erythroblastic hypoplasia with thymic tumors has been noted not infrequently, and their hypothetical relationship is the subject of a recent editorial.[3] However, none of the reported cases refers to the coexistence of this condition with a defect in gamma globulin synthesis. The decision to remove the thymoma of the patient under discussion was based simply on the experience of others that occasional patients with this type of anemia have shown a hematological response to thymectomy [4] and on the postulate that the thymic tumor might, in some unknown way, be suppressing not only the erythrocyte but also the plasma cell precursors and thereby be instrumental in the pathogenesis of the agammaglobulinemia. At the same time it could be argued that the thymic tumor was simply a result or a manifestation of the reticulum disorder and not a factor in its causation. In an attempt to evaluate these possibilities, 250 ml. of fresh plasma from this patient was given intravenously to a normal adult recipient and observations were carried over a two-week period. No change in the recipient's level of erythrocytes or granulocytes was noted, and there were no alterations in the serum protein level or electrophoretic pattern. Reference has already been made to the complete lack of effect of thymectomy on gamma globulin production in a previous case without anemia, and failures have been observed in patients with pure red blood cell anemia who have undergone such surgery.[5] If this patient had survived the operation, and the hematological and protein abnormalities had been alleviated, it might have provided some insight into the pathogenesis of such a postulated disease of reticulum tissue. Some patients with anemia, neutropenia, and "hypersplenism" associated with agammaglobulinemia have shown hematological improvement following splenectomy.[6] Perhaps the present patient might have been benefited by removal of the spleen rather than the thymoma, but this is only a conjecture and points up the confusion surrounding this syndrome, if, indeed, it is but a single disease.

A recent case report with detailed clinical and experimental data describes another adult with acquired hypogammaglobulinemia, anemia, cyclic neutropenia, "hypersplenism," and a thymoma.[7]

From the Department of Internal Medicine, Washington University School of Medicine.

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PERSONAL HEALTH LOG

GUEST EDITORIAL

Carl A. Dragstedt, M.D.

Some years ago Vice-President Marshall attracted a great deal of attention with a facetious remark to the effect that what this country needed was a good five-cent cigar. I would like to attract a little attention to the serious statement that what everyone in this country needs is a good personal health log. By that I mean a suitable booklet in the permanent possession of everyone, in which would be recorded some of the important aspects of his health record, encompassing items from his family history, and data on such things as his vaccinations and inoculations, his diseases and operations, his blood pressure, blood cell counts, and similar laboratory findings. It would be for him, and all of his contacts with hospitals and physicians, somewhat comparable to a permanent passport for travelers. Upon consulting a physician or entering a hospital, he would submit his health log. This would save considerable time now consumed in taking his history and would have the added advantage of being much more accurate and reliable than the frail memory of an anxious patient. Upon the termination of his illness, the log would be returned to the patient.

The American citizen pays a considerable amount of money to get well and to keep well, and the politicians are constantly striving to make political capital out of the grumbling that sometimes accompanies this paying. I believe that it might take a small rumble out of the grumble if the citizen had something tangible in the way of a receipt, which this health log would be in part. Upon settling up with his hospital or his doctor, the patient's log would be returned to him, brought up-to-date as to salient items regarding what was found and what was done. As it is, I dare say that for a great many people in the United States there is much information that has been gathered incident to sicknesses, hospitalizations, and periodic health examinations that is scattered amongst various hospitals and doctors' offices and becoming more and more inaccessible with time.

Think how helpful it would be if the attending physician called to minister to an injured and unconscious patient could depend upon a reliable source of information as to whether the patient was sensitive to horse serum, morphine, or penicillin; as to whether the patient had been immunized to tetanus; or as to what the patient's blood grouping was. Think how helpful it would be to the medical investigator, seeking clues as to the causes or the first hints of various chronic diseases, if he had available a reliable chronological record of the many laboratory tests to which the patient now is subjected and their findings. I do not pretend to be so all-wise as to spell out precisely and completely what should go in and what should be kept out of such a log, and there could be an element of pandering to the hypochondriasis that exists in all of us if no judgment was shown in the matter. I do not think it would take long, however, to crystallize a substantial area of agreement as to this.

I would be inclined to leave the design of the log book to those who are expert in such things, but I have some suggestions. It should be bound well enough to last a lifetime, and the paper should be durable. I think it should be about 4 by 7 in. in size, so that it could be easily kept with other books in the family library and yet be carried on occasion in purse or pocket. Almost every baby born in the last 10 years or so has been launched with a baby book, which is a sort of cousin to the log book as I envision it. But most of these resemble an atlas in their unwieldiness, are emblazoned in pink or blue embroidery (depending upon the sex of the child), and are designed to preserve sundry and diverse memorabilia of the occasion, extending in some instances to a cellophane envelope in which to preserve the first diaper. Many of these are designed for recording data regarding such things as inoculations and have proved extremely serviceable during the childhood years, but I know of few instances in which they have been preserved and continued to serve. The idea of the log book is thus not entirely new but is merely an extension and amplification of one that seems to have worked rather well in a limited field.

ORALLY GIVEN ANTIDIABETIC SULFONAMIDE COMPOUNDS

In recent months, considerable interest has been generated in medical circles concerning certain new sulfonamide compounds that are reported to lower the blood sugar level and to reduce glycosuria in certain diabetic patients after oral administration. Unfortunately, it has resulted in widespread publicity in the lay press. Although one of these compounds, 1-butyl-3-sulfanilylurea, designated carbutamide, has been administered to about 3,500 patients with diabetes in Germany in the past three years and to several hundred diabetics in the United States, it is still too early to predict its possible future role in the treatment of this disease. On page 1285

From Northwestern University Medical School, Chicago.

of this issue of THE JOURNAL is a preliminary report on the use of this compound in 18 patients with diabetes. At least one other drug within this chemical family is under trial on a large scale in the United States. It is the purpose of this editorial to summarize the current status of knowledge on the use of certain sulfonamide compounds (sulfonyl ureas) as antidiabetic agents for oral administration.

At a recent conference of 50 American, Canadian, and German investigators in the field of diabetes, a number of pertinent and new laboratory and clinical facts concerning possible values of two sulfonamide derivatives were presented. Although a variety of chemically related sulfonamide compounds are probably under investigation, information is currently available only on carbutamide and the compound 1-butyl-3-*p*-tolylsulfonylurea, designated tolbutamide. The conference dealt chiefly with the former compound. As a result of reports from various laboratories and clinics, it is possible at present to summarize the following observations.

These sulfonamide compounds given orally or parenterally produce a drop in the blood sugar level in normal animals of several species (rat, mouse, dog, cat, rabbit, monkey, and man). The common feature that seems to be necessary to elicit this effect is the presence of sufficient numbers of islets of Langerhans to produce a certain amount of insulin or the presence of exogenously introduced insulin. In totally depancreatized animals, the effect on blood sugar is not significant, if it is obtainable at all. The effect of lowering the blood sugar level can be obtained in the absence of the adrenals or the pituitary, indicating that these endocrine glands are probably not essential nor primarily involved in the action of the sulfonamides. In the absence of the liver and viscera, these compounds have not been shown to diminish the level of the blood sugar. The major in vitro effects of insulin, such as the greater utilization of sugar by muscle and the promotion of lipogenesis, do not seem to be influenced by these compounds when given by themselves. From these known facts, therefore, it can be said that these compounds are in no way substitutes for insulin, nor do they imitate the action of insulin. The present consensus seems to be that one major effect of these compounds is to diminish the rate of destruction of insulin in the organism. Therefore, they make any available amount of insulin, endogenous or exogenous, more effective. The hypoglycemia probably is due to the action of insulin and not to the direct action of the compounds. This mechanism is at present only a postulate and is not definitively proved. It may be that the compounds also exert actions in other spheres, such as eliciting or enhancing insulin secretion from the pancreas. Studies in this direction have just begun and are not yet definitive.

As can be surmised from these laboratory results, it would be expected that these compounds should exert a blood sugar lowering and antiglycosuric action in certain human diabetics. The observation of many cases in Germany during the past three years and the rapidly accumulating information obtained in the United States and Canada point to the fact that these compounds are effective in reducing hyperglycemia and glycosuria in the adult group with diabetes that is not of the juvenile or "brittle" variety. The action in the juvenile group is either nonexistent or difficult to elicit. Present clinical studies indicate that the age of onset of diabetes and the duration of the diabetic state (since the diagnosis was made) help to determine whether these compounds will be effective in a particular patient group. In general, patients in the older age group with diabetes of relatively short duration seem to respond best. This is generally the type of diabetic patient whose disease is easiest to control by diet. Thus, with the sulfonamide drugs, as with insulin, conformance to dietary restrictions must be observed.

The above tentative conclusions and the information that follows are derived from a considerable number of cases observed during the past four months in various hospitals and clinics throughout the United States. Because these compounds are sulfonamide derivatives, some of them are bacteriostatic. However, the bacteriostatic capacity does not go hand in hand with the hypoglycemic potency of a particular compound. Long-term effects of the ingestion of sulfonamides as contemplated for diabetes are, of course, not yet known. To date, incidence of observed toxic side-effects with carbutamide has not been high. Data on toxicity or lack of toxicity of the other sulfonamides may be expected soon. Liver function tests have not revealed any deteriorating effect on the measured functions of that organ. The bone marrow and serum proteins have remained normal, and no crystalluria or other evidences of kidney damage have appeared. Observations have been made of skin eruptions, an occasional suppression of the white blood cell count, some shift in the proportion of the various white blood cell groups, and an occasional diminution in the uptake of sodium radioiodide (I^{131}) by the thyroid. Evidence also exists that potentiation of barbiturate action may occur. Obviously, the time of observation is too short to permit conclusions about the ultimate frequency of side-effects and toxic reactions.

Hazards exist in the employment of these new drugs in treating diabetic patients. First, it should be remembered that insulin is a specific hormone and replaces, or makes up for, a relative or absolute deficiency, and its substitution by a new drug may carry risks. Its indiscriminate replacement by one of the new drugs may result in hyperglycemia, ketosis, and even coma. When such complications as infection, surgery, or acidosis are present, these new drugs have no place and insulin is the irreplaceable drug of necessity.

In view of the new observations and the accumulation of experience, it behooves all physicians concerned in the treatment of diabetic patients to watch the results of forthcoming study. Since the well-being, comfort, and convenience of the patient are the only objectives in changing treatment, all concerned should await further evidence concerning the usefulness, the indications for treatment with these compounds, and, particularly, the hazards of their use. The drugs at present are not available for sale, and their introduction into general use should come only after exhaustive trials, more definitive knowledge of the mechanism of action, and, especially, long-term observation for any possible chronic deleterious effects.

ORGANIZATION SECTION

ACTIONS BY BOARD OF TRUSTEES

The following actions were taken by the Board of Trustees at meetings held from January to March, 1956.

Meeting of Legal Counsel

Authorization was given to the Law Department to hold a meeting of attorneys representing state and county medical societies. The meeting will be held April 19-20 at the Drake Hotel in Chicago for the purpose of discussing mutual legal problems of organized medicine.

Appointments

Appointments to various committees and meetings were as follows:

Dr. Arthur J. Bedell, to the meeting of the British Medical Association, Brighton, England, July 9-13, 1956.

Drs. F. J. L. Blasingame, Dwight H. Murray, and E. B. Howard, to the meeting of the Chamber of Commerce of the United States, Washington, D. C., April 29-30 and May 1-2, 1956.

The Board designated Dr. Herman G. Weiskotten as the representative of the American Medical Association at a dinner in New York at which the Frank H. Lahey Memorial Award will be presented to Dr. Abraham Flexner.

Dr. Austin Smith was reappointed the Association's representative to the Division of Medical Sciences of the National Research Council for another term of three years, effective July 1, 1956.

At the request of the Secretary of Health, Education, and Welfare for nomination of a representative of the medical profession of the United States to attend the meeting of the World Health Organization in Geneva, Switzerland, May 8-26, 1956, the Board appointed Dr. James R. Reuling.

Physicians' Advisory Committee

Establishment of a Physicians' Advisory Committee for Television, Radio, and Motion Pictures was approved. Physicians, serving in the Los Angeles, Chicago, and New York areas, will assist network script supervisors, producers, and writers in the preparation of television or radio programs on medical subjects. The Committee is composed as follows: Drs. Robert W. Gentry, E. Vincent Askey, James F. Regan, William D. Evans, Eugene F. Hoffman, Richard O. Myers, Ian G. MacDonald, Dudley M. Cobb Jr., Edward T. Tyler, Gerald D. Dorman, Henry I. Fineberg, and Ranato J. Azzari.

Committee on Geriatrics

A Committee on Geriatrics, under the sponsorship of the Council on Medical Service, has been appointed. The members are Drs. H. B. Mulholland, Chairman, Edward L. Bortz, Wingate M. Johnson, Theodore G. Klumpp, Henry A. Holle, Cecil Wittson, and Fred C. Swartz.

Blue Shield Commission

Dr. Thomas P. Murdock was appointed to represent the American Medical Association as one of its representatives on the Board of Commissioners of the Blue Shield Commission for a term of three years, effective April, 1956.

General Practice Prior to Specialization

In accordance with the directive of the House of Delegates, the Board appointed the following persons to membership on the Committee on General Practice Prior to Specialization: Drs. A. C. Scott, Chairman, John W. Green, Joseph C. Griffith, George S. Klump, Lester D. Bibler, W. Andrew Bunten, John W. Cline, F. J. L. Blasingame, and David B. Allman.

Since the February meeting at which this appointment was made, Dr. Scott has passed away. His successor will be chosen soon.

Survey for The Journal

Authorization has been given for a survey to be conducted by Ben Gaffin & Associates of what the physicians in the United States think of THE JOURNAL. It will be recalled that a similar survey was made in 1950.

Standard Nomenclature

Dr. Edward T. Thompson was selected Editor of the Standard Nomenclature of Diseases and Operations.

Hospital-Physician Relationships

Continuation of the meetings of the Liaison Committee of the American Medical Association and the American Hospital Association was authorized. At the meeting of the Liaison Committee held Feb. 10, 1956, it was agreed that three subcommittees should be appointed to consider (1) the problem of hospital trustee and medical staff organization, (2) Blue Cross-Blue Shield relationships, and (3) clarification of the status of the 1951 and 1953 agreements.

Annual and Clinical Meetings

The Board voted that admission to the scientific and technical exhibits at the Annual Meeting in Chicago be restricted to physicians only on Wednesday and Thursday mornings, June 13 and 14, 1956.

Dec. 2-5 have been chosen as the dates for the Clinical Meeting of the Association to be held in Minneapolis in 1958.

Traffic Safety

Authorization was given to enlarge the Committee on Medical Aspects of Automobile Injuries and Deaths by three members. Such appointments will be made in the near future so that the Committee may continue its work in this field.

Cancer Commissions

The Board authorized distribution of Resolution No. 15 on the establishment of state cancer commissions, which was adopted by the House of Delegates in Boston in December, 1955, to the state medical societies, urging that they cooperate with the directive of the House of Delegates.

World Medical Association

The following amendment to the Constitution of the World Medical Association was proposed by the Board of Trustees, for submission to the council of that organization:

That Paragraph 5, Subparagraph (ii), of the Constitution which now reads:

> 'Any other national or territorial medical association which is fully representative of the medical profession in its country or territory or of the members of the medical profession of a recognised ethnic group in its country or territory.'

be changed to read:

> 'Any national medical association which is fully representative of the medical profession in its country.'

The reason is that under the present Constitution there are at least three territories of the United States which could apply for membership in the World Medical Association, thus giving the United States three times its present quota of votes. In the opinion of the Board of Trustees, this correction in the Constitution will obviate any possibility of this being misinterpreted.

National Formulary

Dr. Harold D. Kautz, Secretary of the Council on Pharmacy and Chemistry, and Dr. Walter Wolman, Director of the Association's Chemical Laboratory, were authorized to accept membership on the National Formulary Advisory Panel.

Student American Medical Association

A reception, sponsored by the American Medical Association, will be held for the Student American Medical Association on Sunday, May 6.

ONE OF THE OLDEST JOINT COMMITTEES

The Joint Committee on Health Problems in Education of the National Education Association and American Medical Association, which is celebrating its 45th year of existence, held its annual sessions March 12-14 at the National Education Association offices, Washington, D. C. The committee, which is one of the oldest joint committees of either parent organization, alternates its meetings between the headquarters offices of the A. M. A. and the N. E. A. The chief current project of the committee is the preparation of a volume, "Healthful School Living," in which desirable standards for environmental control in schools are outlined. With the completion of this volume, the committee will have standard references in which are reflected the combined medical-educational opinions on all facets of the school health program.

The following paper was read before the Congress on Medical Education and Licensure, Chicago, Feb. 11, 1956.—ED.

THE BASIC TRAINING OF SPECIALISTS—MEDICAL EDUCATION BY ACCRETION OR BY DESIGN?

Julius H. Comroe Jr., Philadelphia

The total system of medical education as it now exists is one that has "grown more by accretion than by design." [1] A century or two ago, men became physicians largely by a process of apprenticeship. Then the growth of medical knowledge forced the development of strong medical schools, usually in association with universities. Now a new and tremendous growth in medical knowledge has forced the present era of specialization, so that board certification, rather than the M.D. degree, is the ultimate goal of the majority of students of medicine. However, training for specialization is for most physicians still on an apprenticeship basis. The great progress in medical science that has led to a new system of medical practice has not been accompanied by any significant change in the pattern of formal medical education. And yet the specialist-in-training does not simply apply facts and principles learned in medical school but must learn a large special body of knowledge—the science and art of his specialty—that was not part of his four-year medical curriculum. Is it sound and consistent educational policy to insist that the basis for general practice must be learned in formal courses in medical schools but that the basis for special practice should be learned by apprenticeship in some 1,200 approved hospitals?

In 1910 Abraham Flexner surveyed American medical schools, then more than 150 in number, and made recommendations that led to sweeping reforms. These included oblivion for many schools but higher and more uniform standards for the rest. I realize that committees are now at work surveying the residency system in American hospitals. I do not doubt their wisdom, but I believe that the problem is a much larger one than simply the approval or disapproval of specific residency programs or of postgraduate or graduate courses. Essentially it is whether the present system of disconnected experiences labeled premedical, medical, graduate, and postgraduate medical education can be redesigned in some better way.

Total Medical Experience

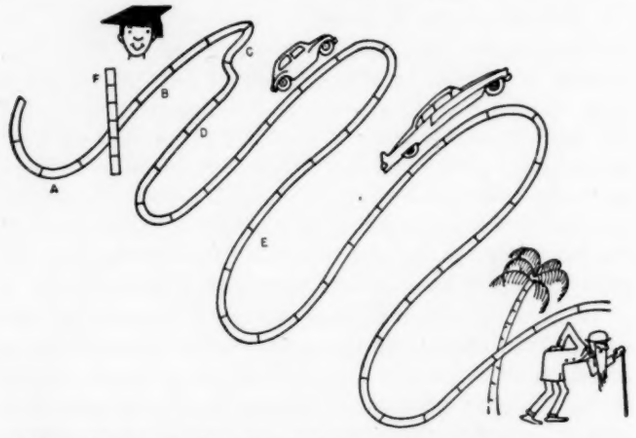
The figure is a schematic representation of the length of the total medical experience, from the first year of premedical education to the time of retirement from medical practice. The path is divided into 49 equal parts, each representing one year in the total premedical and medical experience. First come the four years in premedical school (A), then four years in medical school (B), the one-year internship (C), and, for those who wish to enter specialty practice, an average of four years of training in a residency (D). Finally comes the period of medical practice (E), consisting of early struggle, successful practice, and ultimate retirement, a total of approximately 36 years.

From the Department of Physiology and Pharmacology, Graduate School of Medicine, University of Pennsylvania.

Premedical Course.—The premedical course of four years, given by the faculties of some 800 colleges, is a program that for each student is predominantly scientific or liberal arts in its character, depending upon the premedical requirements of his favored medical schools or advice of counselors or friends. Approximately one-half of the premedical students seeking admission to medical schools are admitted.

Medical School.—The four-year medical school period involves the training of approximately 25,000 to 30,000 medical students, in the four classes, by the faculties of some 80 medical schools. Each of these schools is rated as a grade A school, and the curriculums in these schools are fairly well standardized. The four-year medical period is a formal, basic course and, in many of its aspects, is a survey course in medicine, surgery, and in the medical and surgical specialties. At the end of this program, the student receives the M.D. degree from his own school on the basis of internal examinations.

Internship.—The one-year internship is essentially a year in which the newly graduated physician has a quick look at the clinical aspects of medicine, surgery, and various specialties and decides upon his ultimate career. Somewhere in this period, on the basis of evaluation by outside examiners, he receives a license to practice medicine from a state board or from the National Board of Medical Examiners.



Schematic representation of length of total medical experience. *A*, 4 years, premedical school; *B*, 4 years, medical school; *C*, one-year internship; *D*, average of 4 years' residency training; *E*, medical practice, approximately 36 years; and *F*, three-months' training of freshman or sophomore medical student in anatomy, physiology, biochemistry, pharmacology, microbiology, and pathology.

Residency and Specialty Training.—The residency and specialty training period of three to five additional years is a relatively new development in the over-all plan of medical education in the United States. It is offered yearly to some 25,000 physicians by the staffs of approximately 1,200 hospitals. Just as all 80 medical schools are approved for undergraduate medical education, so these 1,200 hospitals are "approved for resident training." In general, no formal courses are required of these approved hospitals by the American specialty boards or by the American Medical Association Council on Medical Education, although many hospitals engaged in residency programs have organized some formal courses and several schools have formal graduate courses in medicine. For the most part, the hospitals engaged in resident training have no special facilities or faculties for conducting graduate medical education in one or more specialties, and the interest and ability of their staffs vary widely, particularly with respect to the presentation of the basic medical sciences as they apply to special practice. The final test of the resident is by outside examiners, appointed by the American specialty boards.

Medical Practice.—The postresidency years of medical practice represent a period of approximately 36 years, which is under the formal supervision of no one except the Director of Internal Revenue.

New Approach

I believe that an entirely new approach to total medical education might produce a better product in a shorter period of time. One such approach might be by a program that would begin in the third or fourth year of college. The first part would consist of a basic and integrated study for several years of the physical and biological sciences essential for medical practice (including mathematics, physics, chemistry, the physiological and social sciences, anatomy, and microbiology). However, the student would be given sufficient clinical experience (of a modified internship type) early enough in his medical program (possibly during the summer months) to permit him to make an intelligent choice of future career as general practitioner, specialist, or teacher-investigator while still in medical school. The medical school would then complete his formal, basic training for general practice, specialization, or academic career before he leaves for internship, residency, fellowship, or instructorship. (In such a plan, the integrated presentation of the physical and biological sciences might serve also as the basic education for those choosing dentistry or veterinary medicine as a career.)

Such a new approach would relieve some 1,200 hospitals of the difficult task of being at the same time 1,200 graduate schools of medicine; it would put the job of total basic medical education squarely where it belongs—in the hands of medical school faculties. At the present time, this is impossible because students do not as a rule decide upon their future career until they have left the medical schools and scattered as interns in thousands of hospitals. Programs of specialist training as now constituted are, according to this concept, makeshift or stopgap measures that will ultimately disappear when the total picture of medical education is faced realistically by the medical schools. The "approved hospital" can then concentrate on its proper task of providing good apprenticeship and continuing training of specialists on the sound basis already established by the schools of biological sciences and of medicine.

The subject of formal courses in basic medical sciences for residents also requires a broad look at the whole educational experience in basic medical sciences, from the freshman year in medical school to retirement. The figure (*F*) shows, on a proper time scale, the three-

months' training that the freshman or sophomore medical student now receives in anatomy, physiology, biochemistry, pharmacology, microbiology, and pathology. In some schools of medicine, this training in basic medical sciences acquired in the first two years is reinforced in a very satisfactory way in the third and fourth years of medical school; in some, it is not, and training in basic medical sciences and in clinical medicine represents essentially disconnected experiences. In the internship, there is little time for inclusion of further training in the basic medical sciences, although some approved hospitals do reinforce earlier training with correlated clinics, seminars, or an integrated type of teaching on the wards. In the residency years, formal courses are offered in certain aspects of basic medical sciences by some hospitals. In addition, certain hospitals provide correlated teaching by encouraging intimate contact between residents and clinicians who have a deep knowledge of both clinical medicine and the medical sciences. After the residency years, training in basic medical sciences is largely a process of self-education, achieved through the reading of books, monographs, and journals or attendance at meetings or postgraduate courses.

Teaching of Basic Medical Sciences in Residency Years

The question that concerns us today is the teaching of basic medical sciences in the residency years under the present system of medical education, which will of necessity continue until the total system changes to place responsibility on the medical schools. I should like to pose, and attempt to answer, three important questions.

Teaching as Part of Residency Program.—Is the teaching of the basic medical sciences needed in a residency program (regardless of the manner in which this teaching is accomplished)? In my experience, it is necessary for a number of reasons. First, the basic medical sciences learned in the four years of medical school are, to a large extent, forgotten because they were not taught initially as a part of the total medical experience or were never applied to clinical problems in the last two years of medical school or the internship. Thus, basic principles must be relearned. Second, in the four to five years that pass between the first year in medical school and the resident training program, there are many new advances in the basic medical sciences of which the specialist-in-training may be unaware.

Third, there is a tremendous body of knowledge pertaining to the practice of each specialty that was never even included in course work in the four years of medical school, and this must be learned for the first time. This includes the detailed anatomic dissection of areas of the body of greatest interest to the specialist and detailed instruction in the embryology, histology, and pathology of such regions. In addition, in many specialties a great mass of information has accumulated in the fields of physiology, biochemistry, microbiology, immunology, pharmacology, and genetics, and this must become part of the background of an intelligent practitioner of a specialty. For example, in a school of medicine only one or two hours may be devoted to the eye in the course in physiology, but in the Graduate School of Medicine of the University of Pennsylvania a 30-hour course is necessary to present to the ophthalmologists the detailed physiology and pharmacology of the ocular structures. Again, in a school of medicine only several hours may be assigned to the total physiological processes involved in reproduction, but in our Graduate School of Medicine a 30-hour course is necessary to present to the gynecologist and obstetrician the physiological processes of reproduction, including all of the endocrinological changes involved. Again, special instruction in physics is needed by many specialty groups such as the ophthalmologists, the radiologists, and the orthopedists. These and many other subjects constitute the real basis for the understanding of specialty practice and make training in the basic medical and physical sciences mandatory at the residency level. There is a regrettable tendency on the part of some surgical boards to reduce or eliminate credits for special basic courses. To a certain extent, this may be considered a reversion to the old trade school practices of Flexner's time, because the staffs of 1,200 hospitals cannot in fact provide the basic training presented by these basic courses with specially selected faculties.

Self-Education by Resident.—Can the resident educate himself in the basic medical sciences as these apply to his specialty? The essential process of education is teaching the student how to educate himself throughout the remainder of life. There must then be a point at which formal courses should be discontinued in favor of self-educating processes. It has been argued that, in the case of the specialist, this point is at the beginning of the residency period. However, the resident is suddenly confronted with many clinical responsibilities and does not have the time to select, read, synthesize, and integrate the new mass of knowledge in his specialty (not presented to him in medical school) nor can he spend adequate time in departments of physiology, pharmacology, anatomy, biochemistry, and pathology to achieve this. Therefore, the resident should be given some help at the beginning of his specialty training period, just as the physician is given a four-year survey course in medicine before being sent into the internship.

Teachers of Residents.—If some teacher-student relationship is needed, who should teach the resident? Should the resident be taught by the clinical staffs of 1,200 or more approved hospitals, the basic medical science faculties in schools of medicine, or special faculties for advanced education of specialists?

Clinical Staffs of Approved Hospitals: Some of the 1,200 or more approved hospitals have a score or more of clinical scientists (integrated teachers) and have utilized these well for the basic training of specialists. Intimate contact between resident and an integrated teacher (or group of clinicians who can act as an integrated teacher) in ward walks or in the chemistry laboratory, postmortem room, and pathology laboratory represents an excellent way to present the basic medical sciences to the resident. If this cannot be achieved, the basic medical sciences may be introduced into conferences or seminars or presented as formal courses. If

formal courses are given, it is our experience that these should not be separate, disconnected presentations of physiology, biochemistry, and pharmacology but should be an integrated clinical science course; physiological and biochemical processes and pharmacological actions are never separated in an individual patient.

Some hospitals have a score of clinical scientists capable of giving graduate instruction, but these are locked in little empires and not organized for the graduate medical education of residents at that institution. Other hospitals have either no clinical scientists or at most one or two in a particular field and so are incapable of presenting a broad picture of the basic medical sciences to the resident staff. In all instances, most of the members of the staffs of approved hospitals are busy and are unable to devote much time to resident training in the basic medical sciences. Few hospitals have laboratory space available for the teaching of anatomy, pathology, physics, or other medical sciences. For these reasons, it seems to be impossible to achieve uniformly good presentations of the basic medical sciences in 1,200 different hospitals.

Basic Medical Science Faculties: The disadvantages of using basic medical science faculties in schools of medicine are that they are available only to university-affiliated hospitals; faculty members are already occupied maximally with research and the teaching of medical students and are often not interested or trained in the teaching of the basic medical sciences to residents and graduate physicians in special fields of medicine.

Special Faculties: The function of special faculties for the advanced education of specialists should be to provide the basic training for special practice that cannot be given easily, thoroughly, or well by hospital staffs. This includes actual experience in anatomy and pathology laboratories under the guidance of experts, basic courses in physics and chemistry as these apply to special practice, a course correlating all of the basic medical sciences with each other and with clinical medicine and surgery, and a systematic presentation of all the important clinical aspects of a specialty (since some of these are not encountered with equal frequency in all hospital services). In general, special faculties are desirable. They should be staffed by teachers devoted to the advanced education of specialists and not by individuals ordered to present a series of lectures. They must also have an intimate knowledge of the basic medical sciences as these apply to the specialty. Although these faculties can be organized within individual departments or hospitals, the shortage of special personnel makes it desirable that they be organized on a regional or national basis. Actually, the expense involved in the organization of a regional or national graduate school of medicine is less than that required to present similar programs in the basic medical sciences in each of a large number of individual hospitals.

Integration Necessary

It is important to emphasize that formal courses in the basic medical sciences should never be considered as a substitute for a residency training program, but as a part of the residency program to be integrated with it. Such an integrated program can be highly successful. We have recently polled the alumni of our Graduate School of Medicine who have attended an eight-month basic course in our school in addition to receiving training as residents at our own or other institutions. Of these alumni 97.3% indicated that "if they had to do it again," they would prefer the combination of resident-training with the formal basic course in a graduate school of medicine to resident-training alone. It appears, then, that formal courses that correlate the basic medical sciences with one another and with clinical medicine can enrich the educational experience of a physician involved in resident training. Ideally the course work should be followed by a residency program in which basic principles learned in special courses may be applied continuously to the diagnosis and treatment of the sick.

It has been argued that the development of regional or national centers for graduate medical education will delay or prevent the establishment of a sound educational program within each hospital. However, it is my opinion that well-trained residents, returning to the hospital after some months in a center for advanced education, will force the permanent hospital staff to higher standards than could possibly be achieved by an entirely intramural hospital program.

As a concrete proposal for the purpose of aiding hospitals in the training of specialists, the faculty of the Graduate School of Medicine of the University of Pennsylvania is considering a reorganization of its present eight-month basic course for specialists-in-training into two four-month blocks. The first of these blocks would include a presentation of the basic medical and physical sciences, correlated with each other and with clinical medicine, and special laboratory training in anatomy, embryology, histology, and pathology. The second block would present advanced systematic clinical instruction, didactic and practical, in the specialty. Such an arrangement would permit a hospital to send residents for either four or eight months' training, depending upon the needs of each resident and the educational facilities of each hospital; would relieve the hospital of attempting to achieve the impossible task of organizing an intramural graduate school of medicine; and would allow the hospital staff to concentrate its efforts upon the clinical training of the resident who has already learned the scientific basis for his specialty.

In the final analysis, however, I believe that the total medical educational experience requires restructuring in such a way that the faculties of existing medical schools, properly reorganized and expanded for the task, may complete the basic training of the great majority of their students who wish to enter special practice.

1. Berry, G. P.: Medical Education in Transition, J. M. Educ 28: 17-42 (March) 1953.

The following three papers were read before the first Institute of the Medical Society Executives' Conference, Chicago, Feb. 6-8, 1956.—ED.

THE SPECIALTY BOARDS

Byrl R. Kirklin, M.D., Rochester, Minn.

For many years the competence of most specialists varied widely, for each practitioner was the sole judge of his preparation and qualification. In 1916, however, the ophthalmologists organized the American Board of Ophthalmology and empowered it to examine and determine the ability of candidates who sought its certificate of competence. This example was not followed by other specialists until eight years later. Then, in 1924, the otolaryngologists established an examining and certifying board. Again, there was a lull until 1930, when the American Board of Obstetrics and Gynecology was formed, to be followed in 1932 by the American Board of Dermatology and Syphilology. During the latter part of this period of time, plans for the organization of similar boards in other specialties were being actively projected, and all those concerned were desirous of availing themselves of the experience of the already existing boards.

Creation of Advisory Board for Medical Specialists

It was soon recognized, therefore, that some formal and official type of organization must be established. It was clear that an examining board must have the official sanction of the national societies within its given specialty, as well as that of the respective section of the American Medical Association, if one existed, but there was, at that time, nothing to prevent unofficial groups from organizing examining boards and using the title "American Board." Consequently, in order to avoid duplication of effort as well as to coordinate the work of the several boards and other interested groups into a coherent and homogeneous plan, it was deemed advisable to create an advisory board that should give consideration to those problems common to all the specialty boards and that should be representative not only of those interested in forming specialty boards but also of those who were interested in, and responsible for, the medical education, graduate training, and licensing of specialists.

The organization of the Advisory Board for Medical Specialties was, therefore, finally consummated, and a constitution and bylaws were adopted at a meeting in Chicago on Feb. 11, 1934. The original member organizations were the Association of American Medical Colleges, the American Hospital Association, the Federation of State Medical Boards of the United States of America, the National Board of Medical Examiners, and the already-mentioned American Boards of Ophthalmology, Otolaryngology, Obstetrics and Gynecology, and Dermatology and Syphilology. It was decided that two representatives from each member organization should be appointed and that two from each of the incoming member organizations should serve on and comprise the Advisory Board for Medical Specialties.

At this organizational meeting in February, 1934, the American Boards of Pediatrics, Psychiatry and Neurology, and Radiology were granted membership in the Advisory Board. Since that time, boards representing the following specialties have been properly organized, approved, and admitted to membership in the Advisory Board and recommended to the Council on Medical Education and Hospitals of the A. M. A. for recognition: Orthopedic Surgery and Urology in 1935; Internal Medicine and Pathology, 1936; Surgery, 1937; Anesthesiology and Plastic Surgery, 1938; Neurological Surgery, 1940; Physical Medicine and Rehabilitation, 1947; and Preventive Medicine and Proctology, 1949.

Today there are, therefore, 18 specialty boards approved and actively functioning in the 18 major specialties recognized as suitable fields for the certification of specialists. In addition, some of the boards have established subspecialty boards, designated as "subsidiary boards." For example, the American Board of Internal Medicine has subsidiary boards in allergy, cardiovascular diseases, gastroenterology, and pulmonary diseases.

Function of Advisory Board

It has been clearly understood that the Advisory Board for Medical Specialties shall act in an advisory capacity to such organizations as may seek its advice concerning the coordination of the education and certification of medical specialists. Specifically, this function represents an official effort to advance the standards and to improve the methods of graduate education and training in the medical specialties, with certification of those who have fulfilled the minimal requirements and passed the examinations. The common interest of member organizations in these objectives is obvious. It is equally apparent that some fixed definition of specialties needed to be established, preferably on a graduate educational level, and that minimal standards of organization and conduct for new examining boards should be fixed and that some official method of recognition should be developed.

Hence, for the foregoing reasons, the Council on Medical Education and Hospitals of the American Medical Association and the Advisory Board for Medical Specialties have mutually agreed that applications for approval of new specialty boards shall be acted upon first by the Advisory Board for Medical Specialties and then referred to the Council on Medical Education and Hospitals of the American Medical Association for the consideration and recommendations of that body. The approval or disapproval of either group is based upon the standards that have been mutually adopted. It is also understood that the Council on Medical Education and Hospitals cannot be bound by recommendations of the Advisory Board but will consult the Advisory Board for Medical Specialties before acting upon any applications so long as mutually adopted standards are in force.

Early in 1940 there was published the first edition of the Directory of Medical Specialists, containing the names and biographic data of all those certified by the several specialty boards, as well as information regarding the history, organization, and functions of these boards. The seventh edition (1955) of the Directory carries the names and biographies of 50,653 specialists certified prior to August, 1954. It is from the sale of this directory that the Advisory Board derives its only income with which to carry on its activities.

Secretary-Treasurer of the Advisory Board for Medical Specialties and the American Board of Radiology and Emeritus Professor of Radiology, Mayo Foundation, Graduate School, University of Minnesota, and Emeritus Member, Section of Diagnostic Roentgenology, Mayo Clinic.

Organization Pattern of Specialty Boards

All the specialty boards have followed a fairly common pattern in setting up and maintaining their organization. I can best illustrate this point by describing the organization of my own board. We have in the field of radiology five national organizations with membership more or less limited to those within the field of radiology. They are (1) the American Roentgen Ray Society, (2) the Radiological Society of North America, (3) the American Radium Society, (4) the American College of Radiology, and (5) the Section on Radiology of the American Medical Association. During each even year (for example, 1956 and 1958 and so on), each of the afore-mentioned organizations nominates one or more radiologists for a six-year term to the American Board of Radiology for its approval and for election of one as a member of the board. The board is composed of 15 members, known or designated as trustees, 5 of whose terms expire at the end of each even year. Some boards have fewer members and one or two have more, but the method of supplying trustees to the boards is essentially the same for all. All boards are incorporated and have full authority to adopt their own bylaws and formulate their own rules, regulations, and procedures.

Most boards require at least three years of formal residency training, and many require, in addition, one or more years of practice to qualify for examination. For many years most of the boards also required membership in the candidate's county medical society and the American Medical Association, but this requirement recently has been abandoned by most, if not all, of the boards. By and large, the boards limit their activities to (1) setting up and approving, jointly with the Council on Medical Education and Hospitals of the American Medical Association, minimal standards of training in their respective fields; (2) examining those candidates who have fulfilled the prescribed requirements of training; and (3) certifying those who have successfully passed their examination.

Evaluation of Standards of Residency Training

For several years, the Council on Medical Education and Hospitals of the American Medical Association and the specialty boards have worked hand-in-hand in their efforts to evaluate the standards of residency training in the special fields, and the procedure for each board has followed a pretty definite pattern. A hospital or other institution seeking approval of a new program applies to the Council on Medical Education and Hospitals on appropriate forms, listing facilities, volume and type of work, personnel, and other pertinent data. The Council then sends a field representative to inspect the facilities of the hospital and to make a written report and recommendation to the Council, which in turn would, until recently, forward a copy of the application, together with the inspector's report, to the respective specialty board for its review and recommendation. Some boards would consider these data and the applications as a group, but most boards delegated this authority to a committee of the board.

At best, however, much time, often a year or more, might pass before the board would get its recommendation back to the Council on Medical Education and Hospitals of the American Medical Association. Obviously, this worked a hardship on the institution applying for approval. In an effort to overcome these handicaps and therefore to expedite the action, joint residency review committees have been created. Each committee is composed of three members appointed by the Council on Medical Education and Hospitals and three appointed by the respective specialty board from its membership. The combined committee representing each specialty meets once or twice a year, as the needs may require, to review not only new programs but the programs already existing. By this procedure it should be possible to review all teaching programs in each specialty at least once during each three-year period. Today there are in operation joint residency review committees for each of 15 major specialties, and similar committees are under consideration or in the process of formation for the three remaining specialties, as well as some of the subsidiary specialties.

Board Examinations

After completing the required training and practice requirements, the candidate's next step is the examination or examinations given by his board. Many of the boards require that the candidate take both a written and an oral examination. At first, the written examinations were of the essay type, but today most of the boards have replaced this type of examination with the short-answer, multiple-choice, or the "true-or-false" type of examination. This type of examination lends itself to more accurate grading, as well as more extensive testing. After the candidate has passed the written examination, he is eligible for the oral examination that all boards require. Obviously, this examination varies according to the needs of the specialty conducting the examination. This is the candidate's last barrier before he becomes eligible for certification.

It is obvious that specialization is a normal step in the evolution of medicine and that it has largely been responsible for the recent tremendous progress in medicine. It is equally obvious that specialization has given rise to new and perplexing problems by its impact on practically every field and function of medicine. It has also profoundly affected graduate medical education, with 18 specialty boards asking for 18 different training programs designed to fit the varied needs of all aspirants for certification.

The boards have been composed of honest, fearless, and conscientious men who have given freely of their time and deliberations in an effort to raise the standards of their specialty without self-aggrandizement. All boards have attempted to set up their organizations in such a manner as to prevent politically minded selfish persons or groups from gaining control. If any such group ever becomes selfishly dominant, the board affected will cease to perform its proper function.

It should be clearly understood that the power of the 18 specialty boards is by no means absolute, for they heed recommendations of the Advisory Board for Medical Specialties and, in some respects, those of the Council on Medical Education and Hospitals of the American Medical Association. It should also be understood that all boards derive their prerogatives from the organized

practitioners of the respective specialties and that they exercise limited and revocable privileges within those groups only; that the boards have neither the will nor the power to prevent the practice of any specialty by any licensed physician, regardless of his ability or lack of it; and that the main purpose of the boards is to raise the standards of special practice and that they seek to accomplish this, not by command, but by offering a certificate of competence to all practitioners who can meet the minimal requirements of licensure and graduate training and pass their examinations.

THE ROLE OF AN ORGANIZATION LIKE THE MEDICAL SOCIETY EXECUTIVES CONFERENCE

Charles Mortensen, Washington, D. C.

There are some things that two people can do better than one! Matrimony, riding tandem bicycles, and gin rummy are well known examples. Another field, equally adaptable to joint or group cooperation, is certainly the field of association effort. If it were not for the fact that we need to pool our common experience and to work together to solve our common problems, there would be no need for the modern day trade and professional associations that are such a familiar part of our American scene.

The vitality of the association world and the sound values associations offer are clearly demonstrated by the number of associations that are doing business in the United States. It is clear proof of the sound principle of group cooperation when one considers that, according to the U. S. Department of Commerce, there are 1,700 national associations, over 10,000 regional, state, and local associations, and over 500 professional societies.

There is an association for everybody and everything. Associations are with us from the cradle to the grave. Consider this: At the moment you enter the world your parents can call upon the Diaper Service Institute of America for aid and advice. Naturally, one of the next things you will need will be the products of the Toy Manufacturers of the U. S. A. Soon you are ready for the beginnings of formal education, and you should be grateful that the School Service Institute is standing by to see that your schools are the best equipped in the world. As your education advances, you'll reach the point where your interests are held by feminine charms, enhanced by the products of the Corset and Brassiere Association of America. At this point, you may find it advisable to confer with some of the members of the American Association of Marriage Counselors. If they succeed in helping you with your problem, you are all set to call on the National Association of Home Builders and the American Institute of Architects. Properly housed you will be able to think about your future. To help your progress, there are, of course, one or more associations in your own business or profession. If they aren't adequate, there is always the American Vocational Association.

Manager, Trade Association Service Department, United States Chamber of Commerce.

To assist you in getting more fun out of life are the American Society of Travel Agents, the Billiard and Bowling Institute of America, the Dude Ranchers Association, and the Roller Skating Rink Operators Association of the U. S. By this time you are probably over the hump and may need a little patching up. If so, there's the American Dental Trade Association, the Orthopedic Appliance and Limb Manufacturers, and the American Association of Plastic Surgeons. When you are going down for the third time, make a final check with the Insurance Executives Association and the American Monument Association. After that, it's time to call in the National Funeral Directors and the Casket Manufacturers Association of America. Even beyond the grave we have the Spirits Institute, distilled spirits, that is.

Advanced Training in Professional Association Management

Since the case for association effort is clearly established by both popularity and performance, let's consider the question of immediate concern to you. What is the role of an organization like the Medical Society Executives Conference? What are the things that professional association executives can do cooperatively that will benefit them as individuals, that will benefit the organizations they administer, and that will help the members whom they serve. In the broadest sense there is one main job, one basic purpose: that purpose is to use the machinery of your Medical Society Executives Conference to make all of you better medical society executives. In other words, your organization should be a professional society for advanced training in professional association management. Specifically, what does this mean in terms of activities, programs, and service? Here are a few ideas about programs and activities that I hope will be helpful to you.

Research.—In any field of activity there are bound to be problems peculiar to the practitioners within the field. This means research to get the right answers. In your field your professional society can undertake studies of association executives salaries, of budgeting practices, and of expenses for office operations. For many years the Chamber of Commerce of the United States has carried on this type of research study for local chambers. The information obtained has proved invaluable. It provides a necessary yardstick for measuring effective local chamber organization and effort. The data make it easy to tell when a chamber is below par and, as you can well imagine, this helps to bring about improvement. Incidentally, research of this kind is a continuing job. It needs to be done on a regular periodic basis, so that bench marks don't get out of date.

Conventions and Meetings.—All of us in the association world live with and for meetings. In our more pessimistic moments, I suppose we consider them necessary evils, but really we know better. Our meetings and conventions are the show pieces of our organizations, opportunities for inspiration and leadership. The better we make them the stronger are the organizations we represent. Since this is the case, why not make your MSEC a clearing house for convention planning and improve-

ment? Here are some things you might do. 1. Let the MSEC prepare a speakers' roster of sure-fire convention speakers. We have such a list at the National Chamber. It is compiled annually by asking our member associations to tell us about speakers who have done outstanding jobs on the convention platform. Also we ask for a report on fees, for brief descriptions of subject, and for audience reaction. Obviously, a speakers' roster prepared by MSEC would need to be more specialized than the Chamber's list. There is even a possibility that MSEC might act as a booking agency for speakers who could appear on the program of several medical societies. 2. Have MSEC coordinate dates of major conventions and meetings of state and regional medical societies. The advantages in eliminating conflicts in dates would be better attendance, a better break for exhibitors, and a better opportunity to schedule outstanding program features at a maximum number of meetings. 3. The MSEC might act as a source of convention program aids. For example, one of your committees might review new films that would be appropriate for convention use or even develop special presentations and visual aids that all of you can use in your own meetings. We are doing some of this in the Chamber now. Recent cases in point are the color films "It's Everybody's Business" and "People, Products and Progress: 1975" that are sponsored by the Chamber.

Library Service.—No doubt in planning and operating medical societies you have developed a specialized literature of your own, consisting of medical society bulletins, convention programs and promotion material, annual reports, and special services on subjects like accounting and collection. If this is the case it would be very helpful to all of you if you MSEC officers could provide a library and loan exhibit service. Such a library would be a fine way of making available an idea file where you can go for inspiration and where you can look for the fresh approach. ATAE, the American Trade Association Executives, has established just such a library. It is in constant use and is growing every day.

Publications.—The institute program I received in advance of this meeting, the attractive bulletin publicizing the institute, and the helpful letter your officers sent me indicate that you are no amateurs at the association publication business. Therefore, I assume that MSEC has or could have a very useful bulletin or journal. Such a journal can certainly act as a splendid idea exchange. How many of you are familiar with the ATAE "Here's How" series? It works like this. A member of ATAE has a problem. It may be collecting delinquent dues or establishing a new publicity program. He finds the answer to his problem. Then in a brief and practical way he states the problem, tells how his organization went about finding a solution, and reports the results. These case histories are helpful to all executives. Moreover, they make interesting reading and good copy for the ATAE publication. The specialized problems of your own operations presented in this "how to do it" form would be a fine feature for an MSEC publication. Other subjects and features could be news developments, articles prepared by your own people on appropriate subjects, and reviews of books of interest to all of you.

Advanced Training.—The institute you are holding here in Chicago is undoubtedly one of the finest activities you can undertake to advance your own professional training. By creating a situation and climate where you can swap ideas, compare case histories, and look for new fields of service you are taking a practical step that can yield rich results. The mere fact that you are assembled as a group makes it possible for you to bring together speakers and teachers who can give you new points of view and a chance to sharpen your thinking. It is evident from the quality of the program that you are off to a good start on this activity. I am sure you will find such training pays dividends.

Cooperative Activities with Related Organizations.—Much can be learned by working with other organizations in your field. I note you already are closely allied with the American Medical Association, and I am familiar with the active part your own Bill Burns of Michigan plays in the affairs of the American Trade Association Executives. There must be dozens of ways you can cooperate with these organizations through an interchange of ideas and services. Incidentally, this may be a good place for a note of caution. Avoid duplication of effort. Before you start a new MSEC service it would be wise to check with these related organizations to see if they are already providing or could provide the service for you. Or perhaps it would be a type of service in which the work and effort could be shared by MSEC and related organizations.

This suggests another possibility for cooperation. There are many associations and corporations with a strong interest in the medical profession. The National Association of Drug Manufacturers and the Orthopedic Appliance and Limb Manufacturers Association are examples. Perhaps MSEC can be the agency for advising such organizations on the needs and interests of medical societies, which could result in many activities of mutual benefit to your members and these related organizations. These are only a few of the activities possible for an organization like MSEC. You will think of others and, with your own intimate knowledge of the field, your ideas are bound to be better and more specific than the ones that I have suggested.

While it is not difficult to think of ideas, it may be tough to execute them. One of the major problems of operating an organization like the MSEC is that it takes money, staff, and a lot of volunteer effort. As you know, financing does not come easily for a specialized organization like the MSEC. This means you will have to depend on a large measure of dedicated volunteer effort, and nobody will make the effort but you, the executives of the medical societies. But it can be done. The success of organizations like the American Chamber of Commerce Executives, the American Chamber of Commerce Exhibit and the Secretaries Council of the National Association of Real Estate Boards proves that organizations of professional executives can render great service. So, good luck to you. Roll up your sleeves, set up your committees, concentrate your efforts on the most important activities, and start to work. Your fine institute is a great beginning.

INVESTMENT OF ASSOCIATION FUNDS

William C. Norby, Chicago

The investment of medical association funds poses no special problems that cannot be worked out within the time-tested framework of sound investment policy and practice. Proceeding within this framework, solutions come simply and easily.

Statement of Objectives

As with individual funds, charitable funds, or pension funds, the first step is to analyze the association objectives for which the money is being accumulated. In any job that we tackle, we must first know our objectives before we can set up an effective plan of action to accomplish them. I am not informed as to the purposes for which your medical societies accumulate surplus funds, but I would expect that they fall into one of two general categories: (1) short-term funds accumulated for some special near-term project such as a new building or (2) long-term funds that may or may not have a specific purpose but that in any event will not be liquidated in the foreseeable future. Such funds conceivably might be used as endowments for scholarships, as an additional source of income for financing activities of the association, or simply as a permanent reserve against fluctuation in dues and other income.

Establishment of Procedures

The next step in formulating an investment program is to establish the procedures under which it will be operated. I would expect that the investment of association funds would be the responsibility of the executive committee or perhaps an investment or finance committee appointed by the executive committee. If such a committee is to function effectively, it is important that all members understand and agree first on the investment objectives of the fund and then on the investment plan of action. Otherwise, a series of unrelated moves will take place and before long investment results will likely prove unsatisfactory.

The members of a medical society investment committee probably will be practicing physicians who have relatively little time to spend on matters outside of their professional field. This fact would make it advisable for them to secure some kind of professional advice. Investment, like medicine, is a complicated field. It, too, requires full-time application to be successful just as in the world of medicine. There are several types of organizations that are prepared to render investment advice. Trust departments of metropolitan banks and investment advisory firms are the two most important. Their fees are modest in relation to their responsibilities. Remember, also, that the fees should be related to the improvement in performance that the professional achieves over what the committee might have done on its own; in many cases this improvement is substantial.

In the operation of the investment program, the advisor's responsibility is to recommend a program suited to the objectives, to select the securities to implement it, and to follow up periodically with proposals for change in the program and the issues, as required by circumstances. Ordinarily, the executive or investment committee will reserve the power to decide investment policy and to review and approve security recommendations. Perhaps they will wish to delegate such power to act to the advisor and relieve themselves of most of the investment burden. Under such circumstances, only an annual review of results for the committee would be necessary.

Vice-President, Harris Trust and Savings Bank.

The Program

After objectives have been discussed and arrangements made for professional advice and after the respective responsibilities of the advisor and the executive or investment committee have been delineated, the third step is to establish an investment program that reasonably can be expected to achieve the objectives of the fund. Let us see what types of investment programs might be formulated to achieve the normal objectives of a medical society fund.

Short-Term Funds.—If the purpose for which the funds are held is of relatively short-term, the solution is simple. The funds should be invested in high-grade liquid bonds with maturities keyed somewhat to the probable time that the money will be needed. From a practical standpoint, this means either short-term government bonds or the highest grade corporate securities, such as railroad equipment trusts or perhaps nine-month commercial paper of finance companies. Today, this type of program is not nearly so profitless as it used to be, because the yields on short-term government bonds due up to, say, five years are about 2¼ to 2¾%. On high-grade railroad equipment trusts, yields available today are 2¾% to as much as 3⅛% within a five-year range. The reason why short-term funds should be so conservatively invested is that the primary need is to have a specific sum of money available at a certain time. Income over a short period is secondary to the safety and availability of principal.

Long-Term Funds.—When we look at long-term funds, where there is no requirement for a certain amount of principal at a given time, we can afford more flexibility in investment policy. We can seek a higher rate of income and perhaps some growth of capital and income in order to offset possible future inflation of the general price level. These would be desirable achievements for a scholarship endowment fund, for example. This means that we can have some proportion of the funds in common stocks of the leading industrial corporations.

Common stocks are a very tricky and uncertain field of investment, however, unless one understands them. First of all, we do not have a steady upward progression of earnings and dividends each year. Year-to-year earnings will move up and down according to the business cycle and conditions within a particular industry. Furthermore, prices of common stocks fluctuate even more than earnings, due to developments in the investment market and investor psychology, which has alternate periods of optimism and pessimism. Over a period of time, though, such important, well-managed, leading companies as General Motors, Union Carbide, International Paper, Standard Oil Company of New Jersey, and many

others show a remarkable growth in volume, earnings, and assets. Retained earnings have been used to expand the enterprise to take advantage of growing markets and new developments in research. The common stockholder is the one who reaps the benefit in terms of increasing dividends and higher market value.

In the last several years, of course, both the earnings and the optimism have been rising so that we have had a tremendous upward surge of common stock prices. In fact, we have had no substantial decline in stock prices since 1942, and the net rise since then in the Dow-Jones Industrial Average is almost five times. Even in the last two years, the rise has been extremely rapid—more than 70%. Today, however, it appears that common stocks are now fully valued, although there are few excesses. We find the economy operating at virtual capacity, so that for business as a whole there is not likely to be any further rapid expansion of earning power. Nevertheless, it is our opinion that the national prosperity will continue and show a further slight increase in 1956. We see no reason to avoid investment in common stocks at this level of the market.

If an association is to employ common stocks in its investment program in order to achieve some enhancement of capital and income over a period of time, it must be psychologically prepared to accept the risks of common stock investment. That means the committee should not run for cover when it sees a decline in stock prices, for the result will merely be to freeze losses. Instead, it should regard price declines as temporary developments in the long-term growth of the economy. They present opportunities to buy additional shares at more reasonable prices. Obviously, such an approach requires some fortitude and long-term thinking. It is also the reason why the objectives of the fund must be essentially long-term in order to achieve the advantages of common stocks without undue risk. If substantial withdrawals are likely at times when there may also be a slump in business, and perhaps stock prices, the common stock portion should be tempered.

A Current Program

How might such a long-term fund be invested today? We think it suitable for the average fund today to invest 40% of new money in a diversified list of common stocks with the balance in bonds. Over a period of time, we would like to see such a fund increase its common stocks to as much as 50% of the total and, therefore, would hold about 10% of the bonds in fairly short-term maturities to be used as additional buying power for this purpose. We do not know when the market is going to decline or whether it is going to rise further, so we would simply set up a program to buy additional common stocks over, say, the next two years, regardless of market developments, until we got to 50%. Thus, we are hedging our position by not committing all of our money at one time, but instead averaging some of it over the next couple of years on the theory that during that time we will have a period of lower markets in which more shares can be purchased to greater advantage. It may be that we will have only higher markets in the next few years, but, of course, we cannot be sure of that. We have found, however, that averaging purchases over a period of time will give very satisfactory investment results. Once the full bogey is reached, we try to hold closely to it by a periodic balancing of the account.

Let me emphasize that this bogey is for the average fund. The specific circumstances of an association fund might require some different proportion of stocks. However, my bank is operating one association fund on this standard pattern.

The common stock proportion of such a long-term fund should be diversified among perhaps 15 to 25 issues, depending upon the initial size of the fund. To start with, fairly equal amounts of money might be placed in each issue. Certainly such important industries as chemicals, oil, steel, electrical machinery, office equipment, paper, nonferrous metals, building materials, and others should be represented. Out of the 50% invested in common stocks, it might be wise to have a part in public utility stocks, which have the characteristics of stable to gradually rising income, more liberal dividend payments that provide a somewhat higher current income, and narrower price fluctuations.

Possibly some small amount of preferred stocks could be used within this category, also, in order to achieve higher income and stability, but, of course, preferred stocks do not participate in the expansion of the enterprise and, therefore, do not contribute to the growth of the fund as do common stocks. For the bond portion of the fund, we advocate use of corporate bonds for the most part, since additional yield can be obtained with security almost as satisfactory as United States Government obligations, for all practical purposes. The maturities of these issues should be spread over a period of time so that there will be money regularly available for reinvestment in either bonds or stocks, as market conditions at the time may indicate.

Investment Results

What results can be anticipated from the establishment of such an investment program? Certainly today the current income return will be fairly modest. On the bond portion of the fund, the money might be invested to yield on the average about 3⅛% to perhaps 3¼% on the highest grade issues. The common stock portion will not show a very much better return, since many of the most prominent issues are selling at yields of 3% or less. However, with a blend of higher yielding utility stocks, a return of about 3.9% might be obtained in today's market. This would produce an over-all yield for the fund of something in the area of 3½% or a little more.

Granted that this yield is not overly attractive, we must realize there is not much we can do about it. We must deal with investment markets as we find them. The only way we could increase this yield in today's market by a substantial amount would be to downgrade the quality of our bonds and stocks. This could lead to very unsatisfactory results in the future. We are buying the top quality merchandise in the line, so to speak, and, therefore, we must pay the top quality price.

While today's yield is low, I think we may look forward to a fairly steady increase in income from the fund. As we analyze each industrial common stock, we are likely

to find that the company is paying out only 50% to 60% of its earnings and sometimes less. Thus, there is room for dividends to rise as earnings increase, and, on the other hand, there is a cushion on the downside to protect dividends against a reduction in earnings. There are many strong features in our economy today that give considerable confidence that the projections of long-term tect dividends against a reduction in earnings. There are factors that lead us to believe that we can avoid any economic disaster of the kind we experienced in the early 1930's. Among these we might include a greater knowledge of economic and business processes, more long-term thinking on the part of corporate managers, an intelligent monetary policy, and "built-in" cushions of the type that can stop a downward spiral of business activity. These confidence factors are probably among the reasons why prices of common stocks are relatively high today.

We might go back and see what the results of such a program would have been over a period of years. This is very interesting, and at this point in the market we would all feel extremely happy. We can show, however, that a fund invested in this way in 1929 would have shown a profit by 1934, despite the steep decline in stocks in that five-year period. Over the last 25 years, we have also been protected against inflation; a bond fund has only 50% of the purchasing power it had in 1929. In fact, an appraisal of the last 10 years would lead us to think that we should never have been less than 100% invested in common stocks. We do know this is not prudent, however.

Looking ahead, I think it is unreasonable to expect that we can duplicate the investment performance of the postwar period in the next 10 years. Stock prices have pretty well caught up with inflation, and the economy is operating close to capacity. Nevertheless, if our funds showed a growth of 5% a year in principal and income, this would be in excess of the average long-term growth in the economy at stable prices and, therefore, would be a very satisfactory result. If by wise selection of more aggressive companies we can improve on this growth rate to, say, 7% a year, then our income from common stocks would double in 10 years. What we do not know is whether the market will continue to evaluate that income at the same high multiple it is today. That is why we hedge our position with 50% in bonds. By keeping a balance between bonds and stocks, as markets change over time, excellent, but prudent, results can be achieved.

CIVIL DEFENSE MEETING

The National Medical Civil Defense Conference, sponsored annually by the Council on National Defense of the American Medical Association, will be held Saturday, June 9, at the Palmer House in Chicago, just prior to the opening of the Annual Meeting of the A. M. A. A special feature of this year's program concerns the availability and operation of the Federal Civil Defense Administration's 200-bed emergency civil defense hospital. FCDA officials will discuss basic plans dealing with the allocation, distribution, and utilization of the hospital units. Staffing patterns and actual operating procedures by professional and other personnel will be discussed on the basis of data gleaned during field tests conducted in April by the Army Medical Corps at Fort Meade, Md. Also on the program will be appropriate films on technical medical subjects related to civil defense and presentations by outstanding authorities in the field. The one-day session will be attended by representatives of local, state, and national civil defense committees, physicians, and other leaders of health and medical care facilities. Physicians planning to attend the Annual Meeting of the A. M. A. are urged to attend this valuable civil defense meeting. Further information may be obtained from the Council on National Defense.

SALK VACCINE COMMITTEE

Dr. Gunnar Gundersen, Chairman of the Board of Trustees of the American Medical Association, has appointed a committee "to gather the facts relative to the Salk vaccine and its use in the prevention of paralytic poliomyelitis." Members of the committee are Drs. F. J. L. Blasingame, Wharton, Texas, chairman; L. W. Larson, Bismarck, N. D.; T. P. Murdock, Meriden, Conn.; and Julian P. Price, Florence, S. C., all members of the Board of Trustees; James P. Leake, Washington, D. C.; Joseph Stokes Jr., Philadelphia; Gerald D. Dorman, New York; and Hugh Hussey, Washington, D. C. The committee's task will be to review and evaluate the current literature and opinion relative to the Salk vaccine.

NEW PAMPHLET ON QUACKS

The Bureau of Investigation of the American Medical Association has issued a new pamphlet on mechanical quackery. This leaflet describes quacks in general, contains photographs and descriptions of 10 devices or gadgets, gives the background of some of the more notorious fraud cases, and presents a check list for easier identification of quacks in the local community. The Bureau plans to distribute the pamphlet primarily when the A. M. A. exhibit on mechanical quackery is shown at medical society meetings and public gatherings such as health fairs, museum exhibits, or state or county fairs. It also will be sent out by the Bureau in answer to mail requests for information on the subject.

"COMMON COLD" RADIO TRANSCRIPTIONS

The American Medical Association has announced plans for sending a special "bonus" electrical transcription dealing with the common cold to all radio stations in the country that have broadcast Association health transcriptions during the past two years. The platter will have a 15-minute program on each side based on tape recordings taken at a symposium on the common cold held in February in New York by the Common Cold Foundation. Participating in the program are authorities on colds and virus diseases, including Drs. Thomas G. Ward, John H. Dingle, John F. Enders, Yale Kneeland Jr., Melvin N. Newquist, A. E. Feller, Harold S. Diehl, and Clayton Loosli. About 500 disks will be distributed directly to radio stations or through state or territorial distributors—the medical societies of California, Florida, Kentucky, Louisiana, Massachusetts, Michigan, New Mexico, North Carolina, Oregon, Pennsylvania, Tennessee, Texas, Virginia, and Alaska.

MEDICINE AND THE LAW

COMMITTEES FOR THE REVIEW OF MEDICOLEGAL TESTIMONY

Since its creation in August, 1954, the Law Department of the American Medical Association has received many inquiries from state and county medical societies desiring to initiate committees for the review of medicolegal testimony. Accordingly, each state society has recently been asked for information concerning the activity and experience that it or any of its county societies has had in organizing and maintaining such committees or in working on any other joint activities with the Bar Association. This is a report of the results of the survey. A more detailed article on interprofessional codes will appear in this column in the next issue of THE JOURNAL.

Review of Medical Testimony

The Minnesota Plan was initiated in 1940, when a committee was appointed by the president of the Minnesota State Medical Association, with the approval of its council, to review those court cases in which medical testimony appeared to the court, to the attorneys, or to physicians to have been so contradictory as to indicate that one or more of the medical witnesses had consciously deviated from the truth.

Thereafter, the Illinois State Medical Society, the Kansas Medical Society, the Chicago Medical Society, and the Harris County Medical Society (Texas) established committees patterned after the Medical Testimony Committee in Minnesota; however, these committees, in general, have not been successful. In addition to the above, the Louisiana State Medical Society and the Wisconsin Medical Society have worked with their state bar associations in connection with the review of medicolegal testimony. The Medical Disciplinary Board Act of Washington provides for the review of medical testimony by the disciplinary board. The Indiana State Medical Association has a committee to review medical testimony; however, it has not had any cases referred to it for study. Most recently, a committee has been established in Jackson County, Kansas City, Mo., to review medical testimony.

Expert Medical Witnesses

In some states and cities, committees or panels have been created for the purpose of providing the courts with impartial medical expert witnesses. About 15 years ago, the Los Angeles County Medical Association and the Los Angeles Bar Association jointly established a panel of physicians and surgeons to assist the courts in obtaining impartial medical testimony. Today, there are at least 2 physicians on the panel for each specialty, or between 20 and 24 members. The panel physicians are selected by the joint committee of physicians and attorneys after each has indicated his willingness to examine the patient and testify. The court makes all the arrangements, including the establishment of time and place of examination and the compensation the physician is to receive. This cost is generally borne by the party who requests the appointment of the independent examiner. The panel was very successful in its inception, but in recent years the courts have not used independent medical witnesses to a great extent. An impartial medical witness program is now in operation in New York County. A similar plan is under consideration by the St. Louis Bar Association and the St. Louis Medical Society, and such a program has been the object of a joint study by the committee of the Baltimore City Bar Association, the Maryland State Bar Association, and the Medical and Chirurgical Faculty of the State of Maryland.

Liaison with Bar Associations

The District of Columbia and 25 state medical societies have either established liaison with their bar associations or expect to do so in the near future. Twenty-three states apparently do not have any liaison. The table shows the results of this survey by state.

Liaison with Bar Association on State Level

State	Yes	No	State	Yes	No
Alabama	..	X	Montana	X	..
Arizona	X	..	Nebraska	..	X
Arkansas	..	X	Nevada	X	..
California	..	X	New Hampshire	X	..
Colorado	..	X	New Jersey	X	..
Connecticut	X	..	New Mexico	X	..
Delaware	..	X	New York	..	X
District of Columbia	X	..	North Carolina	X	..
Florida	X	..	North Dakota	X	..
Georgia	..	X	Ohio	..	X
Idaho	X	..	Oklahoma	X	..
Illinois	..	X	Oregon	X	..
Indiana	..	X	Pennsylvania	X	..
Iowa	X	..	Rhode Island	X	..
Kansas	X	..	South Carolina	..	X
Kentucky	..	X	South Dakota	..	X
Louisiana	..	X	Tennessee	X	..
Maine	..	X	Texas	..	X
Maryland	X	..	Utah	X	..
Massachusetts	..	X	Vermont	X	..
Michigan	..	X	Virginia	..	X
Minnesota	X	..	Washington	X	..
Mississippi	..	X	West Virginia	..	X
Missouri	X	..	Wisconsin	X	..
			Wyoming	..	X

Interprofessional Codes

In five areas physicians and attorneys have adopted interprofessional codes. These codes establish rules of conduct designed to eliminate some of the friction that has existed between the two professions. In general, they contain provisions relating to written reports to be furnished by the doctor; conferences between physician and attorney prior to trial; arrangements made in advance for the physician to testify; the conduct of a physician while on the witness stand; and the compensation a physician should obtain for testifying. It is generally acknowledged that these codes will not, in and of themselves, eliminate interprofessional friction, but a continuing effort must be made if these problems are to be resolved.

MEDICAL NEWS

ALABAMA

State Medical Meeting in Birmingham.—The annual session of the Medical Association of the State of Alabama will convene at the Thomas Jefferson Hotel, Birmingham, April 19-21, under the presidency of Dr. Frank L. Chenault, Decatur. Addresses of welcome will be made by Mayor James Morgan and by Dr. E. Byron Glenn, Birmingham, president, Jefferson County Medical Society. Presentations by out-of-state speakers will include:

Lesions of the Esophagus. Joseph O. Reed, Detroit.
Chronic Toxicity of Salt (Sodium Chloride) (Jerome Cochran Lecture), John B. Youmans, Nashville, Tenn.
Thoracic Emergencies in the Aged, Duane M. Carr, Memphis, Tenn.
Behavior Problems in Adolescence, J. Roswell Gallagher, Boston.
Prepared Childbirth, C. Lee Buxton, New Haven, Conn.
Convulsions in Children, Katharine Dodd, Little Rock, Ark.
To be announced, Michael Newton, Jackson, Miss.

Members of the association and their wives are invited to be the guests of Dr. Charles N. Carraway, Birmingham, at a barbecue at the Carraway Methodist Hospital Thursday, 5:30 p. m.

Meeting of Chest Physicians.—The third annual meeting of the Alabama chapter of the American College of Chest Physicians will be held April 18 at the Thomas Jefferson Hotel, Birmingham, where the following program will be presented at 2 p. m.:

Congenital Cysts and Tumors of the Mediastinum: Radiological Aspects, Edgar H. Little, New Orleans.
Congenital Cysts and Tumors of the Mediastinum: Surgical Aspects, Duane M. Carr, Memphis, Tenn.
Early Diagnosis of Bronchogenic Carcinoma, Hollis E. Johnson, Nashville, Tenn.
Pulmonary Emphysema and Cor Pulmonale: Physiological Treatment, Ben Branscomb, Birmingham.

At 8 p. m. Dr. Carr will deliver an address, after which he will moderate a conference on x-ray films. Members and guests are encouraged to bring interesting or unusual chest x-ray films for interpretation and discussion at the conference. There will be a dinner at the Thomas Jefferson Hotel, Birmingham, at 6:30 p. m. Reservations for members of the chapter and guests may be made before the meeting or at the time of registration for the afternoon session by contacting Dr. Kellie N. Joseph, Secretary-Treasurer, Woodward Building, Birmingham.

ARKANSAS

State Medical Meeting in Little Rock.—The 80th annual session of the Arkansas Medical Society will convene in the Hotel Marion, Little Rock, April 23-25, under the presidency of Dr. L. H. McDaniel, Tyronza. Presentations by out-of-state speakers will include:

Public Relations and Medical Practice, Mr. Leo E. Brown, Chicago, Director, Department of Public Relations, American Medical Association.
Peptic Ulcer, Julian M. Ruffin, Durham, N. C.
Palliative Medical Therapy of Carcinoma of the Breast, Robert A. Huseby, Denver.
The Normal Chest of Infants and Children—Facts and Fallacies, John W. Hope, Philadelphia.
Teaching General Practice in the Medical School, Robert A. Davison, Memphis, Tenn.
Diaphragmatic Hernia, Marvin E. Johnson, Denver.
Why and How to Take Care of Premature Infants, Clement A. Smith, Boston.
A Review of the Kidney Stone Problem, Harry M. Spence, Dallas, Texas.
Hypofibrinogenemia, Charles P. Hodgkinson, Detroit.
Surgical Treatment of Obstructive Jaundice, George A. Hallenbeck, Rochester, Minn.
The Indications for Treatment of Uterine Myomata, Willard R. Cooke, Galveston, Texas.
Diagnosis and Treatment of External Inflammation of the Eyes in Infants, Alson E. Braley, Iowa City.

Physicians are invited to send to this department items of news of general interest, for example, those relating to society activities, new hospitals, education, and public health. Programs should be received at least three weeks before the date of meeting.

Monday afternoon will be devoted to symposiums on medicine and radiology and to a meeting of the Arkansas Academy of General Practice, at which Dr. Davison will discuss "The Relation Between General Practitioners and Specialists." A health fair, scheduled for 5 to 8 p. m. Monday, will include a panel discussion for the public in the main hall of the auditorium. Symposiums for Tuesday afternoon include surgery, pediatrics, obstetrics and gynecology, urology, and otolaryngology. A social hour, 5:30-7:30 p. m., sponsored by the Pulaski County Medical Society, will precede the annual dinner and dance, 8-12 p. m., where awards will be presented to the winners of the golf tournament, scheduled on Monday and Tuesday at the Little Rock Country Club, and the skeet shoot, which will be held Tuesday at the Riverdale Country Club. In recognition of American Medical Education Week, a special program will be presented Wednesday morning in the lecture hall of the auditorium by faculty members of the University of Arkansas School of Medicine.

CALIFORNIA

Salk School.—Ground was recently broken for the new Dr. Jonas E. Salk School in Anaheim. The school will contain 38 classrooms, four kindergartens, offices, kitchen, and covered passageways. It will be erected on a 20-acre site at the corner of Gilbert and Cerritos avenues.

Phi Delta Epsilon Lecture.—The Alpha Eta chapter of Phi Delta Epsilon Fraternity at the University of Southern California School of Medicine, Los Angeles, will hold its seventh annual lectureship during the week of April 16 at the Los Angeles County General Hospital. Dr. Cecil J. Watson, professor of medicine, University of Minnesota School of Medicine, Minneapolis, will discuss "Some Fundamental and Clinical Studies of Hemoglobin (Heme) Metabolism."

New Diabetes Association.—The recently organized Alameda-Contra Costa Diabetes Association was dedicated Feb. 6 at ceremonies in which the speakers included Dr. Elliott Joslin, Boston; Dr. Charles H. Best, Toronto, Canada; Prof. Bernardo Houssay, Buenos Aires, Argentina; and Dr. Howard F. Root, Boston. Membership (dues for 1956, $5) is open to any member of the Alameda–Contra Costa Medical Association interested in and desirous of promoting the aims of the association. The contemplated plans of the association call for a general meeting of the active scientific members on April 23. A separate nonmedical group will be established in the near future. Diabetic patients or their families interested may write to the Alameda–Contra Costa Diabetes Association, Samuel Merritt Hospital, Oakland 11.

FLORIDA

Annual Medical Meeting in Orlando.—The second annual Central Florida Medical Meeting will convene in Orlando April 19. At 8:15 a. m. wet clinics will be held in the Orange Memorial Hospital operating rooms and ciné clinics in the Educational Building. At 10 a. m. Dr. George T. Pack, professor of surgery, Cornell University Medical College, New York, will speak in the Educational Building on "Treatment of Cancer of the Stomach," which will be followed by "The Differential Diagnosis of Cardiac Pain" by Dr. E. Cowles Andrus, professor of medicine, Johns Hopkins Hospital, Baltimore. At 2:15 p. m. Dr. Richard L. Varco, professor of surgery, University of Minnesota Medical School, Minneapolis, will discuss "Direct Vision Intracardiac Surgical Techniques for Curative Management of Certain Malformations of the Heart," after which Dr. Pack will consider "The Problem of the Pigmented Mole and Malignant Melanoma." A cocktail hour, 6:30 p. m., will precede the banquet for doctors and their wives in the San Juan Banquet Hall. Dr. Pack will serve as moderator for a symposium on

treatment of heart disease, 8:15 p. m., in which the collaborators will be Dr. Varco, Dr. Andrus, and Drs. Fred Mathers and James D. Moody of the Orange Memorial Hospital.

ILLINOIS

Society News.—The Illinois chapter, Arthritis and Rheumatism Foundation, announces that its new offices are located at 1009 N. State St., Chicago. The national organization will hold its annual conference in Chicago, April 17-20.

Clinics for Crippled Children.—The University of Illinois division of services for crippled children has scheduled the following clinics to which any private physician may refer or bring children for consultative services:

April 17, Danville, Lake View Hospital.
April 19, Rockford, St. Anthony Hospital.
April 18, Alton (rheumatic fever), Alton Memorial Hospital; Chicago Heights, St. James Hospital.
April 19, Rockford, St. Anthony Hospital.
April 24, Effingham (rheumatic fever), St. Anthony's Emergency Hospital; Peoria, Children's Hospital.

Chicago

McArthur Lecture.—The Institute of Medicine of Chicago will sponsor the 31st Lewis Linn McArthur Lecture of the Frank Billings Foundation of the Institute of Medicine, "Multiple Sclerosis and Related Diseases," by Dr. Georges Schaltenbrand, director of the Neurological Clinic, University of Wurzburg, at an open meeting at the Palmer House, April 16, 8 p. m. (telephone RAndolph 6-7500). Cocktails at 6 p. m. will precede dinner ($5.75 per plate) promptly at 6:45 p. m. Check for dinner reservation should be sent to the Institute of Medicine of Chicago, 86 E. Randolph St., Chicago 1.

Lecture on Isotopes.—In its Monday lecture series on the uses of radium, radioisotopes, and x-rays in diagnosing and treating diseases (7-9 p. m. at St. Luke's Hospital), Northwestern University Medical School will present "The Use of Radium in the Treatment of Malignant Diseases" by Dr. Eric M. Uhlmann, Chicago, April 16; "Roentgenological Aspects of Unusual Diseases of the Bones" by Dr. David G. Pugh, Rochester, Minn., April 23; and "A Clinical Discussion of the Uses of Radioactive Isotopes" by Dr. Lindon Seed, Chicago, April 30. Dr. Edward L. Jenkinson, chairman and professor of radiology at the medical school, is in charge of the lectures, given in honor of Dr. James T. Case, Santa Barbara, Calif., professor emeritus of radiology, who recently was awarded the gold medal of the American College of Radiology for "his outstanding contributions as an eminent scientist in the field of radiant energy." The lectures are given by staff members from Northwestern University Medical School, the Mayo Clinic in Rochester, Minn., and the University of Illinois.

Meeting on Physical Medicine.—The Chicago Society of Physical Medicine and Rehabilitation will hold its annual meeting April 21, from 9 a. m. to 5 p. m., at the Chicago Clinic of Physical Medicine, 6970 N. Clark St. All physicians are invited. The morning program will be devoted to preservation of "The Hydraulics of Hemodynamics—Its Relation to Problems of Physical Disabilities" by Dr. Milton G. Schmitt and H. J. Holmquest, B.S., M.E., with discussions by Dr. Yvo T. Oester, chairman of research panel on physical disabilities, Stritch School of Medicine of Loyola University, and Dr. Ora L. Huddleston, professor of physical medicine, University of Southern California School of Medicine, Los Angeles, and medical director of the California Rehabilitation Institute, Santa Monica. Luncheon ($4 per person) is scheduled for 12:30 p. m. at the Edgewater Golf Club, 2045 Pratt Ave. Check payable to the Chicago Society of Physical Medicine and Rehabilitation should be sent with request for luncheon reservations to Dr. Ralph E. DeForest, 535 N. Dearborn St., Chicago 10.

MASSACHUSETTS

Phi Delta Epsilon Lecture.—The Alpha Theta chapter of Phi Delta Epsilon Fraternity at Tufts College Medical School, Boston, will hold its ninth annual lectureship April 24, 8 p. m., in the Sherman Auditorium of the Beth Israel Hospital in Boston. Homer W. Smith, Sc.D., of New York University School of Medicine, will discuss "The Role of the Kidneys in Salt and Water Balance."

Surgical Seminar.—The third Boston University Surgical Service of the Boston City Hospital will present its third annual surgical seminar, "Modern Developments in Surgery," at Boston City Hospital, April 18. Dr. Eugene E. O'Neil, professor of clinical surgery, Boston University School of Medicine, will serve as chairman for the following program:

Portal Decompression for Portal Hypertension, Charles G. Child III, professor of surgery, Tufts College Medical School, Boston.
G. I. Hemorrhage, George F. Miller, associate professor of clinical surgery, Boston University School of Medicine.
New Concept of Wound Healing, J. Englebert Dunphy, professor of surgery, Harvard Medical School, Boston.
Total Gastrectomy with Roux-en-Y Esophagojejunostomy in Treatment of Gastric Cancer, H. William Scott Jr., professor of surgery, Vanderbilt University School of Medicine, Nashville, Tenn.
Unusual Problems in Gallbladder Surgery, Robert J. Coffey, professor of surgery, Georgetown University School of Medicine, Washington D. C.
Pathologic Process in Pancreatitis, Henry Doubilet, associate professor of surgery, New York University College of Medicine, New York City.
Report from the Third (B.U.) Surgical Research Laboratory, John J. Byrne, associate professor of surgery, Boston University School of Medicine.
Ulcerative Colitis and Regional Ileitis, Bentley P. Colcock, surgical staff, Lahey Clinic, New England Deaconess and New England Baptist hospitals, Boston.

All physicians are cordially welcome.

NEW JERSEY

Annual Institute in Psychiatry.—The sixth annual Institute in Psychiatry and Neurology, sponsored by the Veterans Administration Hospital at Lyons, the New Jersey Neuropsychiatric Association, and the New Jersey district branch of the American Psychiatric Association, will convene April 18 at the hospital. The morning session will be devoted to a round-table conference, "Effects of Tranquilizing Drugs in Psychiatry," by Dr. Paul H. Hoch, New York City, New York state commissioner of mental hygiene, Dr. Nolan D. C. Lewis, director of research, New Jersey Neuropsychiatric Institute, Princeton, and Dr. Albert J. Plummer, Summit, director, pharmacological research, Ciba Pharmaceutical Company, Inc. The following program will be presented in the afternoon:

Role of Psychiatry in Medical Education, Ralph E. Snyder, dean, New York Medical College, Flower and Fifth Avenue Hospitals.
Type and Effect of Dynamic Psychotherapies, Sandor Lorand, professor, clinical psychoanalytic medicine, State University of New York College of Medicine at New York City, Brooklyn.
Directions of Psychiatry, Francis J. Braceland, Hartford, Conn., president-elect, American Psychiatric Association.
Physiological Evidence of a Split in Brain Function: Some Implications of Psychiatry, Paul D. MacLean, associate professor of psychiatry, Yale University School of Medicine, New Haven, Conn.

"Psychiatric Progress Since 1920" will be the subject of the after-dinner speaker, Dr. Franklin G. Ebaugh, professor of psychiatry, University of Colorado School of Medicine, Denver.

NEW YORK

Society News.—At its stated meeting April 17, in the McNaughton Auditorium, Brooklyn, the Medical Society of the County of Kings and the Academy of Medicine of Brooklyn will present "Significance of the Lower Intestinal Mucosal Polyp and Its Treatment" by Dr. Michael R. Deddish, associate clinical professor of surgery, Cornell University Medical College, New York City, with discussion by Dr. A. W. Martin Marino, clinical professor of surgery, State University of New York College of Medicine at New York City, Brooklyn.——Dr. Joseph J. Eller, director of dermatology, New York City Hospital, will present "Improved Abrading of Acne Scars and Other Skin Blemishes by New Rotary Abrasive Serrated Steel Wheels Powered by Vibration-Free Apparatus," before the Rockaway Medical Society at the Lawrence Country Club, Lawrence, Long Island, April 19, 9 p. m.

Camp for Cardiac Children.—The Sprout Lake Camp for Cardiac Children, which, during its six years of operation, has served only children selected from clinics, hospitals, and welfare agencies, has been opened to children referred by private physi-

cians. The 90-acre camp, in a pine forest 11 miles from Poughkeepsie, was established in 1949 by the Associated Cardiac League, Inc. A medical board of cardiologists serves in an advisory capacity. The members of the medical board visit the camp in rotation during the summer. The camp physician and a registered nurse are in residence at all times. Each four-week session (July and August) serves 80 boys and girls between the ages of 8 and 12 years. Counselors are selected from medical schools and college employment bureaus. Physicians who wish to use the camp should request a health record form from the New York City office at 1 Union Square West. The telephone number is WAtkins 9-8055.

New York City

Commemoration of Anniversary of Freud's Birth.—The New York Academy of Medicine will hold its meeting April 20 at the Academy Building (2 E. 103rd St.) in commemoration of the hundredth anniversary of the birth of Sigmund Freud. Dr. Paul H. Hoch will preside at the afternoon clinical session, 3-5 p. m., in which "Freud and Psychiatry" will be considered by Dr. Kenneth E. Appel, Philadelphia; "Freud and Medicine" by Dr. Roy R. Grinker, Chicago; and "Freud and Prophylaxis" by Dr. Paul V. Lemkau, Baltimore. Dinner, 6:30-8 p. m. (subscription, $10), will be followed by the evening session, 8:30 p. m., with Dr. Iago Galdston presiding over the following program:

Freud in the Perspective of Medical History, Gregory Zilboorg, New York.
The Impact of Freud upon Anthropology, Clyde K. Kluckhohn, Ph.D., Cambridge, Mass.
Freud's Influence in Contemporary Culture (speaker to be announced).

Annual Hobby Show.—The 10th annual Hobby Show for Older Persons, April 19-29, will be held in the Temporary Exhibition Hall of the American Museum of Natural History, Central Park West and 77th Street, under the sponsorship of the Welfare and Health Council of New York City. A consultation service will be available for exhibitors and visitors wishing professional help with their problems. Launched in 1947 at the Russell Sage Foundation, with about 300 exhibitors, primarily members of recreation centers and homes and hospitals for the aged, the Hobby Show last year attracted an audience of 18,510, including many from other states and foreign countries, and had a total of 1,826 exhibitors, including 1,210 residents of homes for the aged and members of day centers for the aged. Last November, the Welfare and Health Council opened the Elder Craftsmen Shop at 850 Lexington Ave., where more than 2,000 handicraft items made by men and women over 60 are on sale at prices ranging from 25 cents to $400. The store seeks to extend further encouragement to older people to use old skills and develop new ones, by helping them to achieve some degree of independence and productivity.

NORTH CAROLINA

Nalle Lectures.—The seventh Nalle Clinic Foundation Lectures will be presented at the Veterans Recreation Center, Charlotte, April 20. At 5 p. m. Dr. Willoughby E. Kittredge, associate professor of urology, Tulane University of Louisiana School of Medicine, New Orleans, will discuss "The Significance of Congenital Anomalies of the Genito-Urinary Tract in Children." At 8 p. m. Dr. R. Gordon Douglas, obstetrician and gynecologist-in-chief of the New York Hospital and professor of obstetrics and gynecology at Cornell University Medical College, New York, will deliver the seventh Brodie C. Nalle Lecture, "Premature Separation of the Placenta." Physicians are invited to attend.

OHIO

Chief Physician Needed for Columbus.—The Columbus Civil Service Commission announces the position of full-time physician to direct the city's recently established occupational health program, developed in consultation with the department of preventive medicine, Ohio State University College of Medicine, Columbus, as a prototype for municipal occupational health services. An academic appointment for suitable candidates may be considered. The chief physician will have over-all responsibility for the health and safety of the 3,400 city employees; establish medical policy; supervise a centrally located dispensary for the conduct of placement and periodic physical examinations; establish physical standards for job placement; and appraise all hazardous work operations. The salary will depend on training and experience. Provision is made for sick leave, vacation leave, and participation in the City Employee's Retirement System. Applicants should be eligible for certification in occupational medicine by the American Board of Preventive Medicine. Address: Civil Service Commission, or Dr. James P. Hughes, Acting Chief Physician, City of Columbus, Columbus 2.

OKLAHOMA

Personal.—Dr. Herbert Kent, director, department of physical medicine, University Hospitals, Oklahoma City, addressed the Southwest Regional Conference of the American Public Welfare Association, April 4, on "Rehabilitation Aspects in Chronic Disease."

Meeting on Pulmonary Disease.—The Oklahoma chapter of the American College of Chest Physicians will hold its annual meeting at the Veterans Administration Hospital, Oklahoma City, April 15, in conjunction with the Oklahoma Trudeau Society meeting. A critique and summary of the day's presentations will be given by Drs. William B. Tucker, Durham, N. C., and Donald L. Paulson, Dallas, Texas. Dr. Tucker will also speak at the dinner, 7 p. m., at the Skirvin Hotel, his subject being "Current Evaluation of Antimicrobial Drugs in Tuberculosis." His presentation will be followed by "Indications for Pulmonary Resection in Tuberculosis" by Dr. Paulson.

Atomic Medical Convention.—The Southwest American Exposition in Oklahoma City, April 22-28, will feature the Atoms for Peace exhibit of the United States government. On April 21, when the exhibit will be shown exclusively to the medical profession, the Oklahoma County Medical Association will sponsor the first Atomic Medical Convention. The program for the convention will start at 1 p. m., with a tour of the exhibit. Dr. Marshall H. Brucer, chairman, medical division of the Oak Ridge (Tenn.) Institute for Nuclear Studies, will consider "Isotopes in Medicine—What They Are" at 3 p. m. At 3:45 p. m. Dr. Gould A. Andrews, chief of clinical services, medical division of the institute, will have as his subject "Isotopes in Medicine—How They Are Used." Dr. Dwight H. Murray, Napa, Calif., President-Elect of the American Medical Association, will be the speaker at the banquet, 6:30 p. m.

OREGON

Society News.—Newly elected officers of the Oregon Radiological Society include Dr. Gregory B. Nichols, Portland, president; Dr. James B. Haworth, Salem, president-elect; Dr. John W. Loomis, Portland, vice-president; and Dr. Norman L. Bline, Portland, secretary-treasurer.

Alumni Meeting.—The Alumni Association of the University of Oregon Medical School, Portland, will hold its 41st annual meeting April 18-20 in conjunction with the Sommer Memorial Lectures and the Oregon chapter, American Academy of General Practice. The following speakers will present papers during the meeting: Dr. Louis A. Brunsting, Rochester, Minn.; Dr. Arthur W. Allen, Boston; and Dr. Edward B. Shaw, San Francisco.

Personal.—A postdoctoral fellowship was recently awarded to Dr. Donald T. Smith, who will do research in the department of medicine at the University of Oregon Medical School, Portland, under the direction of Dr. Roy L. Swank, head of the neurology division. The award was granted by the National Institute of Neurological Diseases and Blindness.——Dr. Homer H. Harris, head, Oregon State Police Crime Detection laboratory at the University of Oregon Medical School, Portland, resigned Sept. 1 and will enter the private practice of pathology. ——Dr. Howard P. Lewis, head of the department of medicine at the University of Oregon Medical School, Portland, has been named editor of *Modern Concepts of Cardiovascular Disease*, a monthly bulletin of the American Heart Association.——Dr.

Frank B. Queen, professor of pathology at the University of Oregon Medical School, Portland, delivered the presidential address before the annual meeting of the American Society of Clinical Pathologists, which was held in Chicago Oct. 8-15, 1955. His subject was "Our Society After One-Third of a Century, Advances and Changing Issues."

TEXAS

Meeting of Chest Physicians.—The Texas chapter of the American College of Chest Physicians will hold its annual meeting in the Galvez Hotel, Galveston, April 22, during the meeting of the Texas Medical Association. Presentations by out-of-state speakers will include:

Systemic Mycoses, Emma S. Moss, New Orleans.
Histoplasmosis and Blastomycosis, Edward P. Cawley, Charlottesville, Va.
Principles of Inhalation Therapy, Maurice S. Segal, Boston.
Primary Tuberculosis in Childhood—Presentation, Course, Treatment, and Sequelae, John Derham, Liverpool, England.

Personal.—Dr. Carter Anderson Jr., Tyler, who has served as a leader in scouting for 21 years, was recently honored at the annual banquet of the East Texas Area Council of Boy Scouts of America and was presented with the Silver Beaver award for distinguished service.——Dr. Russell John Blattner, head, department of pediatrics, Baylor University College of Medicine, Houston, received the Washington University Alumni citation "in recognition of outstanding achievements and services which have reflected honor upon the university" during the university's Founders' Day assembly Feb. 23.

State Medical Meeting in Galveston.—The 89th annual session of the Texas Medical Association will convene at the Buccaneer Hotel, Galveston, April 21-25. The general meetings will open Wednesday at 10 a. m., with Dr. J. Layton Cochran, San Antonio, president, presiding. The address, "Socioeconomic Trends and Their Effects upon the Private Practice of Medicine," by Dr. Dwight H. Murray, Napa, Calif., President-Elect of the American Medical Association, will precede a paper, "Intracranial Tumors in Infancy and Childhood," by Dr. Douglas N. Buchanan, Chicago. The Tuesday morning session will open with "Diagnosis and Treatment of the Painful Low Back" by Dr. Rexford L. Diveley, Kansas City, Mo., which will be followed by "Functional Diseases of the Digestive Tract" by Dr. Sara M. Jordan, Boston; "Carcinoma of the Cervix and Pregnancy" by Dr. Herbert E. Schmitz, Chicago; and "Treatment of Hyperthyroidism and Thyroiditis" by Dr. Samuel F. Marshall, Boston. On Wednesday morning the following papers will be presented by out-of-state speakers:

The Changing Epidemiological Picture, Harry S. Mustard, New York.
Surgical Lesions of the Pancreas, Waltman Walters, Rochester, Minn.
Chronic Cough in Children, Daniel C. Baker Jr., New York.
The Psychotherapeutic Treatment of the Ambulatory Anxiety State, O. Spurgeon English, Philadelphia.

The address of the incoming president, Dr. Milford O. Rouse, Dallas, will be presented Wednesday afternoon, as will "Air Force Crash Survival Research, Automotive and Aircraft" by Lt. Col. John P. Stapp, M. C., U. S. A. F., Holloman Air Force Base, N. Mex. Other out-of-state speakers include the following: Drs. Elmer C. Bartels, Paul A. Chandler, and Maurice S. Segal, Boston; Dr. Joseph H. Boyes, Los Angeles; Dr. Emma S. Moss, New Orleans; Dr. George T. Pack, New York; Drs. Walter S. Priest, Ralph A. Reis, and Paul C. Hodges, Chicago; Dr. Edward P. Cawley, Charlottesville, Va.; Dr. John Derham, Liverpool, England; Dr. F. Raymond Keating Jr., Rochester, Minn.; and Dr. Perry P. Volpitto, Augusta, Ga. The section on internal medicine has scheduled panel discussions on "Management of Graves' Disease" and "Chemotherapy of Infections Due to Bacteria, Fungi, and Viruses." The section on obstetrics and gynecology will have a panel discussion on prolonged labor and one on indications and selections of type of hysterectomy. A motion picture program, staged in cooperation with Mr. Ralph P. Creer, Secretary, Committee on Medical Motion Pictures, American Medical Association, Chicago, will include showings on Sunday at 7:30 p. m. and on Monday, Tuesday, and Wednesday at 10 a. m. The women's auxiliary will hold its meeting simultaneously with that of the parent organization, as will numerous other organizations.

VERMONT

Symposium on Physical Education.—"Your Heart, Health, Exercise, and Food" will be the subject of a symposium presented in the Waterman Building, University of Vermont, Burlington, April 20, 8 p. m. Dr. Hans Kraus, associate clinical professor of physical medicine and rehabilitation, New York University College of Medicine, New York, will consider "The Role of Inactivity in the Production of Disease." Dr. Wilhelm Raab, professor of experimental medicine, University of Vermont College of Medicine, will discuss "Loafers' Muscles and Loafers' Hearts." Miss Blair Williams, assistant professor, home economics department, University of Vermont, will speak on "Food, Not Fate," and Mr. Ray Magwire, director, division of health and physical education, Vermont State Department of Education, will have as his topic, "There Are Physical Activities for You from Cradle to Grave." The conference will be cosponsored by the department of physical education, the medical college, and the Town and Country Days Committee of the university, and by the state department of education.

VIRGINIA

Academy of Surgery.—The first dinner meeting of the Northern Virginia Academy of Surgery was held in Arlington Jan. 31. The speaker of the evening, Herold C. Hunt, LL.D., Ed.D., undersecretary, Department of Health, Education, and Welfare, discussed "The Organizations and Programs of the Department of Health, Education, and Welfare for the Coming Year." The academy was founded Dec. 19 for "the cultivation and improvement of the science and art of surgery in all its branches, and such other matters as come legitimately within its sphere." All qualified surgeons and surgical specialists in Arlington and Fairfax County have been invited to join the Founders Group. Officers of the academy are Dr. Lloyd B. Burk Jr., president; Dr. John E. Alexander, vice-president; Dr. W. Leonard Weyl, secretary; and Dr. Michael A. Puzak, treasurer, all of Arlington.

WISCONSIN

New Pediatric Professorship.—The University of Wisconsin, Madison, announces the establishment of a trust by Mr. Joseph S. Daniels of Rhinelander, the income of which is to be given to the university for support of the Doctor Alfred D. Daniels Professor on Diseases of Children in the University of Wisconsin Medical School.

Chest Physicians Meet in Milwaukee.—The annual meeting of the Wisconsin chapter of the American College of Chest Physicians will be held at the Schroeder Hotel, Milwaukee, April 29. Dr. Leon H. Hirsh, Milwaukee, has arranged the following scientific program:

Recent Advances in the Management of Asthma, Giles A. Koelsche, Rochester, Minn.
Pulmonary Manifestations of Collagen Diseases, Joseph F. Kuzma, Milwaukee.
Atrial Fibrillation—Reversion to Sinus Rhythm, Ray W. Kissane, Columbus, Ohio.
Significance of Isolated Nodular Lesions in the Chest X-Ray, Edwin R. Levine, Chicago.
Treatment of Congestive Heart Failure, John F. Briggs, St. Paul.

The speakers will participate in a panel discussion of questions from the floor, moderated by Dr. Mischa J. Lustok, Milwaukee.

Meeting on Tuberculosis.—The 48th annual meeting of the Wisconsin Anti-Tuberculosis Association will be held at the Hotel Schroeder, Milwaukee, April 19-20. Sessions will begin at 10 a. m. and continue through the afternoon. There is no registration fee. The program will include:

What We Don't Know About TB, Floyd M. Feldmann, New York.
Why Your Community Needs a First-Class Health Department, Henry F. Vaughan, D.P.H., Ann Arbor.
The Patient-Staff Relationship in the Sanatorium, Dale C. Cameron, Minneapolis.
Multiphasic Role of the Modern TB Hospital, Edward A. Piszcek, Chicago.
TB is Where You Find It, Miss Alice I. Porter, New York.
Community Self-Study, Mr. Richard W. Poston, Carbondale, Ill.

For information, write to: Annual Meeting Committee, Wisconsin Anti-Tuberculosis Association, 1700 W. Wells St., Milwaukee 1.

GENERAL

Orthopedic Meeting in Pittsburgh.—The Interstate Orthopedic Society will meet in Pittsburgh April 18. The afternoon session will be devoted to case presentations by members on a voluntary basis. A social hour and dinner will precede a discourse by Dr. John R. Cobb, New York, on scoliosis. Information may be obtained from Dr. Harold H. Sankey, Secretary-Treasurer, Interstate Orthopedic Society, 121 University Pl., Pittsburgh 13.

Bailey K. Ashford Award.—The American Society of Tropical Medicine and Hygiene will accept nominations for the Bailey K. Ashford Award in Tropical Medicine until May 1. The award was established at the annual meeting of the American Society of Tropical Medicine in Memphis (1939) by Eli Lilly & Company. The award will be $1,000 and a bronze medal suitably engraved. An additional amount of $150 or as much thereof as may be necessary is available toward traveling expenses for the recipient of the award. Nominations (in triplicate) may be submitted for any investigator who is a citizen of the United States of America and less than 35 years of age on Jan. 1 of the year in which the award is made. The recipient must not be associated with a commercial laboratory and need not be a member of the society.

Mental Health Campaign.—Throughout May the National Association for Mental Health will sponsor the fifth annual Mental Health Campaign, for which a drive will be launched during Mental Health Week, April 29-May 5, under the banner "The Mentally Ill Need Your Help." Memberships and contributions will be solicited. Contributors of $1 or more will automatically become members of the association. Television, radio, and magazine publicity is being arranged, and outdoor advertising companies are being urged to cooperate by contributing billboard space from April 15 to May 31. The U. S. Post Office Department has given permission to carry on a "% Postmaster" mail campaign, so that contributors in any state may send donations through the mail addressed simply Mental Health, % their local postmaster.

Association of the History of Medicine.—The American Association of the History of Medicine will hold its 29th annual meeting at Duke University, Durham, N. C., April 19-21. The Thursday morning session will be devoted to a symposium on southern medicine and the Friday morning session to a symposium on the history of epidemiology. The Garrison Memorial Lecture will be presented Friday afternoon by Dr. F. N. L. Poynter, librarian of the Wellcome Historical Medical Library, London, England. The Trent Memorial Lecture will be delivered at the medical school Wednesday evening, April 18, by Chauncey D. Leake, Ph.D., of Ohio State University College of Medicine, Columbus. His talk will be sponsored by the J. C. Trent Society for the History of Medicine at Duke University, which was established in 1952 in honor of the late Dr. Josiah C. Trent.

Society for Artificial Organs.—The American Society for Artificial Internal Organs will hold its second annual meeting in Atlantic City, N. J., April 15-16, under the presidency of Dr. Willem J. Kolff, Cleveland. On Sunday a dinner meeting, 7 p. m., in the Hotel Madison, will be followed by colored movies (dinner $4). On Monday the sessions will be opened in Convention Hall at 9 a. m. by Dr. Clarence Dennis, Brooklyn, president-elect. A panel on technical aspects and results with new types of pump–gas exchange machines will be moderated by Dr. Kolff. At 11:30 a. m. Dr. Dennis will moderate a panel on cardiac valves, prostheses, and transplantation and at 2 p. m. a panel on clinical experience with artificial heart-lung machines. A panel on the artificial kidney (Dr. Kolff, moderator), 4:30 p. m., will conclude with "Status of the Artificial Kidney in Europe" by Dr. Hermann Sartorius (Freiburg, Germany).

Competition for Blakeslee Awards.—The American Heart Association announces the fourth annual Howard W. Blakeslee awards competition for newspaper and magazine articles, books, radio and television programs, and films, published or produced between March 1, 1955, and March 1, 1956. Entries may be submitted through May 1 and must be on special forms provided by the heart association. The awards, carrying a minimum honorarium of $500, will be made during the annual meeting of the association in Cincinnati, Oct. 27-31. The awards were established in 1952 as a memorial to the late Howard W. Blakeslee, science editor of the Associated Press and founder of the National Association of Science Writers, who died of heart disease during that year. Requests for information or for entry blanks should be sent to Howard W. Blakeslee Awards, American Heart Association, 44 E. 23rd St., New York 10.

Institute for Catholic Hospital Personnel.—An Institute on Supervisory Development for administrators, board members, and supervisory personnel of Catholic hospitals in Arizona, California, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, Alaska, and Hawaii will be conducted by the Catholic Hospital Association and the Western Conference of Catholic Hospitals at Providence Hospital, Seattle, April 20 and 21. Topics to be discussed include relationships between department heads, supervisors, and the administrator; human relations; work simplification methods; increasing efficiency by helping personnel do a better job; creating motivation among employees; training and instructing employees; employee participation in supervisor planning; and the cost and effects of poor supervision. The meeting will close with a showing of "The Dedicated," a documentary film on hospital operation in ancient and modern times, produced by the Catholic Hospital Association of the United States and Canada.

Society News.—The second annual meeting of the **Western Gerontological Society** will be held in Los Angeles, April 20-21, on the University of Southern California campus. A panel discussion, "Adding Life to Years," will be sponsored jointly by the Western Gerontological Society and the American College of Physicians Friday in the university's Bovard Auditorium. ——A Conference of Pathologists and Radiologists of the **Veterans Administration of the Western Area** was held Feb. 15-17 at the Veterans Administration Hospital, Oakland, Calif. The program included addresses by Dr. Benjamin Miller, director, radiology service, and Dr. Rufus L. Holt, chief, clinical pathology and blood program, Central Office, Washington, D. C. ——At the annual meeting in Chicago, the **American College of Radiology** awarded its gold medal to Dr. Eugene P. Pendergrass, Philadelphia, and Dr. Samuel W. Donaldson, Ann Arbor, Mich., in recognition of outstanding contributions during their careers in radiology. In the three-year history of the college, gold medals have been presented to only 13 other persons, including Mme. Marie Curie, discoverer of radium, and W. D. Coolidge, Ph.D., Sc.D., General Electric Company, inventor of the modern roentgen-ray tube.

Cancer Society Offers Clinical Fellowships.—The American Cancer Society announces that its program of clinical fellowships (stipend $3,600 a year), will continue through the institutional year, July 1, 1957-June 30, 1958. Fellowships will be made available primarily to teaching institutions whose postgraduate specialty training programs are approved by the Council on Medical Education and Hospitals of the American Medical Association. The deadline for filing applications for 1957-1958 is May 1, 1956. No application forms are necessary, but letters of application should include: number of fellowships applied for; funds available to the institution from other sources for partial support of fellows; nature of specialty contemplated for the fellow's training; name of individual under whose supervision the fellow will be trained and to whom he will be directly responsible; date the fellowship will commence; and a thorough documentation as to the training the fellow will receive at the institution, including facilities available, i. e., tumor clinics, opportunities for diagnosis, treatment, clinical research. Application for one or more fellowships should be addressed to Dr. Brewster S. Miller, American Cancer Society, 521 W. 57th St., New York 18, via the executive officer of the institution.

Meeting of Pediatricians.—The American Academy of Pediatrics will hold its spring session at the Sam Houston Coliseum in Houston, Texas, April 16-19, under the presidency of Dr. Harry Bakwin, New York City. A panel discussion on treatment of convulsive disorders will be presented Monday, 11:25 a. m., by Dr. John Stobo Prichard, Toronto, Canada, and Drs. Dora Chao and Ralph I. Druckman, Houston. A paper on behavior

problems in early schizophrenia (illustrated with motion pictures) will be presented Wednesday at 9:40 a. m. by Dr. Ruth M. Bakwin, New York. The final paper of the scientific sessions, "Bronchial Asthma," will be read by Dr. Claude A. Frazier, Asheville, N. C., at 11:35 a. m., Wednesday. After luncheon the buses will leave for the various clinics to be held at the Texas Medical Center. These clinic sessions will include cardiology, poliomyelitis, and diagnostic clinics (Wednesday) and endocrinology, neoplasms in the pediatric age group, and management of leukemia in childhood (Thursday morning). Diagnostic clinics will also be presented in Galveston, Texas, Thursday morning. The Tulane University alumni will hold a dinner and meeting on Monday. The social program includes a welcome hour at the Rice Hotel, Sunday, 6-7:30 p. m., and cocktails and a banquet, Rice Hotel, Tuesday, 6-7:30 p. m.

Allergists Meet in New York.—The American College of Allergists will hold its 12th congress and graduate instructional course in allergy at the Hotel New Yorker in New York City, April 15-20. Dr. Lawrence J. Halpin, Cedar Rapids, Iowa, president of the college, will respond to the address of welcome by Dr. Murray M. Albert, Brooklyn, president, New York Allergy Society. Dr. Halpin's presidential address Thursday, 2 p. m., will precede introduction of the president-elect, Dr. Ethan Allan Brown, Boston, which will be followed by presentation of "A New Theory of the Allergic Phenomena" by the guest speaker, Manesseh G. Sevag, Ph.D., department of microbiology, University of Pennsylvania School of Medicine, Philadelphia. A cocktail party is scheduled for 6:30 p. m. The guest speaker at luncheon Friday, 12:30-2 p. m., will be Dr. Bela Schick, New York, who will have as his subject "Physiological and Pathological Allergy." The Association of Allergists for Mycological Investigations, Inc., of which Dr. Homer E. Prince, Houston, Texas, is president, has scheduled an evening session for Wednesday, 8-10 p. m., which will consist essentially of an informal question and answer period. All physicians interested in mold allergy are invited to attend and take part in the discussions. At the same time there will be an evening session of the medical writers' workshop under the chairmanship of Dr. Jonathan Forman, Columbus, Ohio, editor, *Ohio State Journal of Medicine*. Dr. Ethan Allan Brown will consider "How Not to Write Medical Papers."

Surgical Meeting in Tucson.—The Southwestern Surgical Congress will hold its eighth annual meeting April 16-18 at the Pioneer Hotel, Tucson, Ariz. "Immediate and Delayed Repair of Hand Injuries" by Dr. Joseph H. Boyes, Los Angeles, will precede an illustrated hour at 11 a. m. during which "Visual Aids in Surgical Presentations" and "Congenital Dislocation of Hip in the Apache Indian" will be shown. Dr. Frederick H. Krock, Fort Smith, Ark., vice-president of the congress, will preside at a round-table luncheon, 12:20-1:35 p. m., which will precede a panel, "Industrial and Rural Injuries of the Hand," for which Dr. Boyes will serve as moderator and Drs. Sidney E. Blandford Jr., Denver, and Stephen R. Lewis, Galveston, Texas, as collaborators. Cocktails, 6:30 p. m., will precede the annual banquet at 8 p. m. Dr. John Adriani, New Orleans, will be the guest speaker Tuesday morning. His presentation, "Anesthesia in the Aged and Poor Risk Patients," will be followed at 11 a. m. by an illustrated hour, which will include "Examination of the Breast" and a demonstration of a new electronic instrument, the cardiocaster. Dr. John V. Goode, Dallas, Texas, president-elect of the congress, will preside at the round-table luncheon, after which Dr. Adriani will serve as moderator for a panel, "New Concepts and Recent Advances in Anesthesia," with Dr. John H. Mayer Jr., Kansas City, Mo., and Dr. William S. Derrick, Houston, Texas, as collaborators. The presidential address, "Polio Vaccination Program in Oklahoma and in the Southwest in General," will be delivered at 3 p. m. On Wednesday the guest speaker, Dr. Robert A. Wise, Portland, Ore., will discuss "Diagnosis and Treatment of Mixed Tumor of the Parotid Gland" at 9 a. m. and will serve as moderator for a panel discussion, 11 a. m., on "Carcinoma of the Breast," for which the collaborators will be Dr. Ervin A. Hinds, Denver, and Dr. Leo J. Starry, Oklahoma City. The sessions will adjourn at noon.

Oto-Ophthalmologic Meeting.—The Pacific Coast Oto-Ophthalmological Society will hold its 40th annual meeting April 15-19 at the Camelback Inn, Phoenix, Ariz. After the presidential address by Dr. Lester T. Jones, Portland, Ore., Dr. L. Weston Oaks, Provo, Utah, will introduce the guest of honor, Dr. Horace G. Merrill, San Diego, Calif. "Differential Diagnosis and Management of Lesions Involving the Orbit" will then be discussed by the guest speaker, Dr. Albert C. Furstenberg, dean of the medical school and professor of otolaryngology, University of Michigan Medical School, Ann Arbor. The program on ophthalmology will open Wednesday at 8:30 a. m. with "Keratoacanthoma of the Eyelid" by Dr. Homer R. Crisman (by invitation) and Dr. Leonard Christensen, Portland, Ore. Other speakers by invitation will include: Drs. Taylor Asbury and Carleton E. Van Arnam, San Francisco; Drs. F. Francis Fowler and Harold B. Alexander, Los Angeles; and Dr. Jack D. Stringham, Salt Lake City. The following motion pictures will be shown during the ophthalmology sessions: Surgical Treatment of Lid Tumors; Delivery of the Luxated Lens by Smith Method; Cataract; Influence of Drugs on the Choroidal Circulation; Exenteration; Corneal Transplantation for Endothelial and Epithelial Corneal Dystrophy (Fuchs); Clinical Applications of Electroretinography; and Oxygen in Retrolental Fibroplasia: Ophthalmological Aspects. The scientific sessions on otolaryngology will open Wednesday at 8:30 p. m. with a motion picture, "Technique of Tonsillectomy." At 9:30 a. m. Dr. Furstenberg will present "The Nucleus Ambiguus, Its Pattern of Motor Cells and Its Clinical Significance." Other invitational addresses will be given by Dr. Daniel C. Moore, Seattle, and Dr. Walter E. Berman, Beverly Hills, Calif. The Thursday session will open with a motion picture, "Laryngectomy and Radical Neck Dissection for Carcinoma of the Larynx" and will close with a motion picture on postoperative aerosal therapy.

American College of Physicians.—The American College of Physicians will hold its 37th annual session April 16-20 at the Shrine Auditorium in Los Angeles. The James D. Bruce Memorial Lecture on Preventive Medicine, "Remarks on the Present Status of Etiologic Discovery in Human Viral Diseases," will be delivered Tuesday, 2:30 p. m., by John F. Enders, Ph.D., associate professor of bacteriology and immunology, Harvard Medical School, Boston. At the same time on Wednesday afternoon the John Phillips Memorial Lecture, "The Nature of Molecular Diseases," will be presented by Linus C. Pauling, Ph.D., professor of chemistry, California Institute of Technology, Pasadena. The convocational oration, "Oscar Wilde, a Medical Appreciation," will be given by Dr. Macdonald Critchley, London, England. The presentations Thursday afternoon will include "Survival in Untreated and Treated Cancer" by Dr. Michael B. Shimkin, National Cancer Institute, Bethesda, Md., and Dr. Matthew H. Griswold (by invitation), Connecticut State Department of Health, Hartford. A "Dutch-treat" cocktail party at the Biltmore Hotel Thursday, 7 p. m., will precede the annual banquet of the college and film celebrity show. Friday at 2:20 p. m. Dr. Ewen T. Downie, senior honorary physician and dean of the Clinical School, Alfred Hospital, University of Melbourne (Australia), will deliver the Lilly Lecture, "Diabetes Mellitus and Clinical Research," after which Dr. Roy L. Swank, professor of neurology, University of Oregon Medical School, Portland, will give an invitational address, "Seven Years' Experience with a Low Fat Diet in Multiple Sclerosis." "Fat Embolism: A Problem of Increasing Importance to the Internist and Orthopedist" will then be presented by Dr. Julian Love and Dr. William S. Stryker of the U. S. Naval Hospital, Corona, Calif. The sessions will close with an address, "Neurosurgical Alleviation of Parkinsonism, Chorea, and Athetosis" (illustrated by moving pictures), by Dr. Irving S. Cooper, assistant professor of neurological surgery, New York University College of Medicine, New York.

Industrial Health Conference.—The 56th Industrial Health Conference will be held at Convention Hall, Philadelphia, April 21-27. Component organizations include the American Conference of Governmental Industrial Hygienists, American Industrial Hygiene Association, American Association of Industrial Nurses, Industrial Medical Association, and the American Association of Industrial Dentists. The first two of these groups will hold

a joint session Tuesday, 2-3 p. m., followed by a joint session of all the associations at 3:30 p. m., when the following program will be presented:

Fundamental Factors in Interpersonal Communication, Fillmore H. Sanford, Ph.D., executive secretary, American Psychological Association, Washington, D. C.

Fundamental Factors in Persuasion, Mr. William E. Robinson, president, the Coca-Cola Company, New York.

Experience in Communication and Persuasion in Industrial Medical Services, William P. Shepard, 2nd vice-president, Metropolitan Life Insurance Company, New York.

The Industrial Medical Association has scheduled the following clinics for Tuesday morning: Cardiovascular Problems in Industry Which Are Amenable to Surgery (Hahnemann Medical College and Hospital of Philadelphia); New or Unusual Occupational Diseases (Jefferson Medical College of Philadelphia); Handling of Injuries of the Upper Extremity (Temple University School of Medicine); Demonstration of Certain Techniques Used in Health Maintenance Examinations (University of Pennsylvania School of Medicine); and Detection of Disease by Survey Methods (Woman's Medical College of Pennsylvania). The Tuesday afternoon session of the Industrial Medical Association will be opened by Dr. Keiffer D. Davis, president, before an address of welcome, "Interrelationships of Community and Industrial Health Services," by Dr. James P. Dixon, commissioner of health, Philadelphia. The Sappington Memorial Lecture, "The Engineering of Consent," will be delivered at 2:20 p. m. by Edward L. Bernays, B.S., New York, counsel on public relations, and formerly adjunct professor in public relations, New York University. The Industrial Medical Association will have as luncheon speaker, Wednesday, Dr. Thomas L. Shipman, health division leader, Los Alamos (N. Mex.) Scientific Laboratory, whose subject will be "The ABC's of Radiation." His address will be followed by a symposium on the role of nutrition in health and disease. The medical and surgical sections of this association will present a joint symposium, "Initial Handling at Professional Level of Emergencies," Thursday morning. The medical section will have a symposium, "The Effectiveness of Periodic Medical Evaluation in the Maintenance of Health and the Early Detection of Disease," Monday at 2 p. m., followed by a panel discussion moderated by Dr. John E. Deitrick, Philadelphia. The surgical section will present a symposium on the shoulder cuff syndrome at 2 p. m.

CANADA

Surgeons Meet in Edmonton.—The American College of Surgeons will hold a sectional meeting April 23-25 at the Macdonald Hotel, Edmonton, Alberta, after the annual meeting of the Surgical Society of Western Canada, April 20-21. The first W. Fulton Gillespie Memorial Lecture will be delivered on Monday evening by Dr. Howard K. Gray, professor of surgery, University of Minnesota Graduate School, Minneapolis-Rochester.

FOREIGN

Meeting on Pathological Anatomy.—The International French-Speaking Anatomopathologists' Congress will convene in Strasbourg, France, May 25-27. Seven reports will be given on primary cancer of the liver and biliary tracts. Information may be obtained from Dr. Andre Opperman, Institut d'Anatomie Pathologique, Hospices Civils, Strasbourg (Bas-Rhin), France.

Symposium on Liver Disease.—The fourth Symposium on Pathophysiology, Diagnosis, and Therapy of Liver Diseases will be held under the chairmanship of Prof. Dr. Ludwig Heilmeyer, June 29-July 1, at the Medical University Clinic of Freiburg, in Breisgau. The number of participants will be limited. Additional information may be obtained from: Dr. Kuhn, Medizinische Universitäts Klinik, Freiburg, i. Br., Germany.

Ophthalmologic Meeting in Paris.—The Société Française d'Ophthalmologie will hold its 63rd congress in Paris, May 6-10, at the Centre Marcelin-Berthelot (28 bis rue Saint-Dominique). The main theme will be "Edemas of the Optic Nerve." Surgical meetings and demonstrations will be organized in the hospital services on Monday and Thursday afternoons. The League Against Trachoma will hold its general meeting Monday, 2:30 p. m., and will begin its therapeutic discussions on Thursday afternoon at the end of the congress.

CORRECTION

Indications for Prednisone.—In the item under Switzerland in Foreign Letters, "New Indications for Prednisone" (March 17, 1956, page 994), the dose of prednisone in the 13th line should have been in milligrams not grams.

EXAMINATIONS AND LICENSURE

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF ANESTHESIOLOGY: *Written.* Various locations in the United States and Canada, July 20. Final date for filing application was Jan. 20. Sec., Dr. C. B. Hickcox, 80 Seymour St., Hartford 15, Conn.

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOGY. *Written.* Various centers, July 26. *Oral.* St. Louis, Oct. 12-15. Final date for filing applications was April 1. Sec., Dr. B. M. Kesten, One Haven Ave., New York 32.

AMERICAN BOARD OF INTERNAL MEDICINE: *Written.* Oct. 15, 1956. Final date for filing application is May 1. *Oral Examinations in 1956.* Chicago, June 7-9. Final date for filing application for these three oral examinations was Jan. 3. New York City, Sept. 21-25. Final date for filing application was April 1. *Cardiovascular Disease.* Chicago, June 6. The number of candidates is limited to 24 and the final date for filing applications was Apr. 2. Exec. Sec., Dr. William A. Werrell, 1 West Main St., Madison 3, Wis.

AMERICAN BOARD OF NEUROLOGICAL SURGERY: St. Louis, May 3-5. Sec., Dr. Leonard T. Furlow, 660 South Kingshighway, St. Louis.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *Oral and Pathological Examinations. Part II.* Chicago, May 11-20, 1956. *Part I.* Applications now being accepted. Final date for filing applications is Oct. 1. Dr. Robert L. Faulkner, 2105 Adelbert Road, Cleveland 6.

AMERICAN BOARD OF OPHTHALMOLOGY: *Practical Examination.* San Francisco, June 18-21, St. Louis, Oct. 20-24. *Written.* Jan. 21, 1957. Applications must be filed before July 1, 1956. Sec., Dr. Merrill J. King, Box 236, Cape Cottage Branch, Portland 9, Maine.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: *Part I. Oral and written.* Various centers, April, 1956. Final date for filing application was Nov. 30. *Oral. Part II.* Chicago, January 1957. Final date for filing application is Aug. 15. Sec., Dr. Sam W. Banks, 116 South Michigan Ave., Chicago 3.

AMERICAN BOARD OF OTOLARYNGOLOGY. *Oral.* Montreal, Canada, May 6-10. Sec., Dr. Dean M. Lierle, University Hospitals, Iowa City.

AMERICAN BOARD OF PATHOLOGY: *Pathologic Anatomy and Clinical Pathology.* Boston, April 18-20. Final date for filing application was March 15. Sec., Dr. Edward B. Smith, 1040 W. Michigan St., Indianapolis 7.

AMERICAN BOARD OF PEDIATRICS: *Oral. Part II.* Atlantic City, May 3-5; Cincinnati, June 8-10; New York City, Oct. 12-14, and San Francisco, Dec. 7-9. Sec., Dr. John McK. Mitchell, 6 Cushman Road, Rosemont, Pa.

AMERICAN BOARD OF PHYSICAL MEDICINE AND REHABILITATION. *Parts I and II.* Chicago, June 16-17. Sec., Dr. Earl C. Elkins, 200 First St., S. W., Rochester, Minn.

AMERICAN BOARD OF PLASTIC SURGERY. *Entire Examination.* Buffalo, May 13-15. Final date for filing case reports was Jan. 1. Corres. Sec., Mrs. Estelle E. Hillerich, 4647 Pershing Ave., St. Louis 8.

AMERICAN BOARD OF PREVENTIVE MEDICINE: *Oral and Written. Public Health.* Given at Columbia, California, Harvard, Tulane and Minnesota schools of public health. *Aviation Medicine.* Chicago, April 13-15. Sec., Dr. Ernest L. Stebbins, 615 N. Wolfe St., Baltimore.

AMERICAN BOARD OF PROCTOLOGY: *Part I.* Philadelphia, May 5. Final date for filing application was March 15. Sec., Dr. Stuart T. Ross, 520 Franklin Ave., Garden City, N. Y.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY: Philadelphia, April 16-18, 1956. Sec., Dr. David A. Boyd, 102-110 Second Ave. S.W., Rochester, Minn.

AMERICAN BOARD OF RADIOLOGY: Chicago, June 5-9. Final date for filing applications was Jan. 1.; Los Angeles, Sept. 30-Oct. 4. Final date for filing applications is June 1. Sec., Dr. B. R. Kirklin, Kahler Hotel Bldg., Rochester, Minn.

AMERICAN BOARD OF SURGERY: *Part II.* Boston, May 14-15 and Philadelphia, June 4-5. Sec., Dr. John B. Flick, 255 S. Fifteenth St., Philadelphia.

AMERICAN BOARD OF UROLOGY: February 1957. Sec., Dr. William Niles Wishard, 1711 N. Capitol Ave., Indianapolis 7.

BOARD OF THORACIC SURGERY. *Written.* Various centers throughout the country, September. Final date for filing application is July 1. Sec., Dr. William M. Tuttle, 1151 Taylor Ave., Detroit 2.

GOVERNMENT SERVICES

ARMY

Career Opportunities.—Fort Detrick at Frederick, Md., has published a list of vacancies in positions requiring medical officers in internal medicine and pathology and bacteriologists, medical and general. The internist desired would be civil service, grade GS-15, at a salary of $11,610 per annum. He would serve as chief of a division responsible for planning, directing, and coordinating a program for the development and improvement of vaccines, toxoids, and immunological methods and a program of medical care, laboratory examination, and prophylaxis for personnel whose work involves exposure to occupational diseases peculiar to the work at the fort. The pathologist desired would be grade GS-14 at a salary of $10,320 per annum, and he would plan and conduct research on pathological, physiological, and chemical aspects of reactions between the host and agent. Qualified persons interested should forward a résumé or federal government application form 57, plus listing of college courses and grades to the Civilian Personnel Office, Fort Detrick, Frederick, Md.

Personal.—Deputy Surgeon General James P. Cooney's promotion to major general was confirmed by the United States Senate on March 16, 1956. He was sworn in as the deputy surgeon general of the Army on July 13, 1955, when he succeeded Major Gen. Silas B. Hays, who had become the surgeon general of the Army on June 1.

NAVY

Navy Doctor Receives Medal.—Capt. Lloyd B. Shone was awarded the National Safety Council President's medal at a ceremony in the Pentagon, Washington, D. C., March 9. The medal is given for successful resuscitation in saving life by the Schafer prone pressure or Holger Nielsen arm-lift back-pressure methods. Only 2,000 medals have been awarded since 1928. During a dinner at the Army-Navy Country Club in Arlington, Va., Captain Shone responded to an emergency call to revive a 13-year-old boy who was found unconscious at the swimming pool. The boy had been carrying two rubber ear plugs in his mouth while swimming and one of them lodged in his windpipe and was choking him. Captain Shone performed a tracheotomy and revived the boy by resuscitation. It was for this action that the award was presented. Captain Shone is currently head of the industrial health branch of the Bureau of Medicine and Surgery's preventive medicine division.

Officer Attends Sixth Middle East Assembly.—Capt. Donald W. Miller, M. C., represented the Bureau of Medicine and Surgery and presented a paper titled "Treatment of Burns" at the sixth Middle East Medical Assembly, in Beirut, Lebanon, April 6-8. Captain Miller is on the staff of the Naval Hospital, Newport, R. I. Personnel of Navy Medical Research Unit no. 3, Cairo, Egypt, also participated in the assembly.

VETERANS ADMINISTRATION

Preliminary Report of Review of Compensation Cases.—Some time ago the Veterans Administration began a review of all cases in which a veteran (regular or reserve) less than 55 years of age was receiving compensation for a service-connected disability and cases in which veterans under 55 were receiving pensions for non-service-connected disabilities. The review, which is being conducted on a "time available" basis, will cover a total of 1,713,280 cases and is expected to be completed in three to four years. Of 422,428 cases reviewed to date, the agency has found that nearly 96% were accurate.

Harvey V. Higley, Administrator of Veterans Affairs, said adjustments were found necessary in only 18,805 cases, or 4.5% of the total claims reviewed thus far. These cases covered 2,229 veterans found eligible for increased benefit payments, 8,583 instances in which benefit payments had to be decreased to match the degree of disability, and 6,656 claims in which benefit payments were terminated, primarily owing to an improvement in the disabling condition to a level no longer justifying monetary awards. The 6,656 veterans in the latter category have confirmed service-connected disabilities and may be returned to the compensation rolls if these disabilities again become disabling. The balance of the adjusted cases, involving 1,337 claims, were of veterans whose payments were terminated through severance of service connection after the agency found "clear and unmistakable error" in associating the disability with the period of service.

Where the review indicated an improper establishment of "service connection" or a "too high" payment for a service-connected disability, the veteran received notification, but the VA delayed adjustment of the award for 60 days so the veteran could present additional evidence or take other steps to rebut the VA finding. In addition, any veteran whose pension or compensation case is adversely affected may appeal his case to the Administrator and have it considered by the Board of Veterans Appeals in Washington.

VA is governed in compensation and pension cases by Public Law 141, 73rd Congress, March 28, 1934, which provides that "all reasonable doubts shall be resolved in favor of the veteran, the burden of proof being on the Government." The purpose of the review, Mr. Higley said, is to make certain veterans are receiving the compensation and pension benefits to which they are rightfully entitled under the law.

PUBLIC HEALTH SERVICE

Reserve Officers Needed.—Qualified physicians and other professional health personnel actively engaged in public health practice and preventive medicine are urged to apply for commissions in the service's commissioned reserve, which is being expanded to increase the nation's readiness to meet the unusual public health demands of national emergencies. Physicians, nurses, sanitary engineers, and dentists make up the majority of officers now in the commissioned reserve. In the event of national emergencies such officers would have the opportunity of serving their country in the capacities for which their professional training and experience have fitted them. They would be called for emergency duty primarily to reinforce the staffs of official state and local health agencies and to augment the Public Health Service operating staff. No commissioned reserve officer will be called to emergency active duty, with the exception of volunteers, unless the situation is publicly recognized as requiring such action. Expansion of the commissioned reserve began about 18 months ago as the result of a decision by the Federal Civil Defense Administration authorizing the Public Health Service to intensify research on the detection and control of diseases associated with major national disasters; to develop a program to assist state and local health departments in emergency restoration of basic health services; and to expand and reorganize the commissioned reserve for rapid mobilization. All interested personnel are invited to write to the Surgeon General, Public Health Service (DP), Washington 25, D. C., for information about the commissioned reserve.

MISCELLANEOUS

Grants in Support of Science.—The National Science Foundation has announced 164 grants totaling about $3,240,500 awarded during the quarter ending Dec. 31, 1955, for the support of basic research in the natural sciences, for conferences in support of science, for exchange of scientific information, and for summer institutes for refresher training of high school and college undergraduate science teachers. Since the beginning of the program in 1951, such awards have been made, totaling more than 24 million dollars.

The grants were made to institutions and scientists in many states and territories. The research grants were approved by the National Science Board on the recommendation of Dr. Alan T. Waterman, director of the foundation.

DEATHS

Winkelman, Nathaniel William ⊕ Philadelphia; born in Philadelphia Oct. 28, 1891; University of Pennsylvania School of Medicine, Philadelphia, 1914; interned at the Allegheny General Hospital in Pittsburgh, 1914-1915, and a resident in neuropsychiatry at the Pittsburgh City Hospital from 1915 to 1918; in 1919 appointed to teaching staff at his alma mater, advancing through grades to assistant professor of neurology in 1929; professor and chairman of the department of neurological pathology at the Medico-Chirurgical College, Graduate School of Medicine, University of Pennsylvania, where he was director of the John L. Eckel Laboratory since 1936; at one time professor and head of the department of neurology at the Temple University School of Medicine; specialist certified by the American Board of Psychiatry and Neurology; life member of the New York Academy of Science; past-president of the Philadelphia Neurological Society and the American Association of Neuropathologists; member of the American Neurological Association, of which he was second vice-president, 1944-1945; fellow of the American Psychiatric Association and the College of Physicians of Philadelphia; member of the Philadelphia Pathological Society, Pennsylvania Psychiatric Society, Philadelphia Psychiatric Society, Sigma XI, and the Association for Nervous and Mental Disease; served in France during World War I; medical director and one of the founders of the Philadelphia Psychiatric Hospital, where he was vice-president in charge of medical affairs; formerly neurologist at the Mount Sinai Hospital; neurologist at the Jewish Hospital; served as visiting neurologist at the Philadelphia General Hospital, where for many years he directed the department of neuropathology, which he established; neurologist at the Albert Einstein Medical Center, Northern Division; consultant at the Norristown (Pa.) State Hospital, Scranton (Pa.) State Hospital, and St. Joseph Hospital in Reading; consultant in psychiatry at the Home for Jewish Aged; died in the University Hospital Feb. 13, aged 64, of urinary tract infection and nephritis.

Farenholt, Ammen ⊕ Rear Admiral, U. S. Navy, retired, San Diego, Calif.; born in Norfolk, Va., Dec. 9, 1871; Harvard Medical School, Boston, 1893; entered the naval service as an assistant surgeon in the Navy Medical Corps on May 29, 1894; promoted to passed assistant surgeon May 29, 1897; became lieutenant Dec. 26, 1900, surgeon March 3, 1903, commander Aug. 29, 1917, and captain Oct. 15, 1917; appointed rear admiral in 1930, to date from Dec. 7, 1926, and was transferred to the retired list of the U. S. Navy on Jan. 1, 1936; served during the Spanish-American War and World War I; established and commanded the first Dispensary and Naval Hospital located at San Diego, and for that service was awarded a special letter of commendation that entitled him to wear a Silver Star on his World War I Victory Ribbon; in 1930 reported to the Bureau of Medicine and Surgery, Navy Department, Washington, D. C., and was assigned duty as inspector, medical department activities, East Coast, with additional duty on the Board of Examiners and Retirement and as assistant to the chief of the Bureau of Medicine and Surgery; from 1931 to 1936, when he was retired, served as inspector, medical department activities, West Coast, with additional duty as district medical officer, Eleventh Naval District, headquarters in San Diego; fellow of the American College of Surgeons; died Feb. 12, aged 84, of cerebral thrombosis.

Whitacre, Rolland John ⊕ Shaker Heights, Ohio; born in Vandergrift, Pa., May 19, 1909; Hahnemann Medical College and Hospital, Philadelphia, 1933; president of the American Board of Anesthesiology; past-president of the Ohio Society of Anesthesiologists, Cleveland Society of Anesthesiologists, American Society of Anesthesiology, of which he was a director, and the Academy of Anesthesiology; executive secretary and a member of the board of trustees of the International Anesthesia Research Society; chairman of the section on anesthesiology of the American Medical Association, 1952-1953, and a member of its House of Delegates in 1955; past-chairman of the section on anesthesiology, Ohio State Medical Association; a member of the joint hospital accreditation committee of the American Medical Association and the American Hospital Association; chairman of the committee on professional services of the Academy of Medicine of Cleveland; founder and head of the department of anesthesiology at the Huron Road Hospital in Cleveland, where he was past-president of the medical staff; associate editor of *Anesthesiology;* founder and editor of the *Anesthesia Digest;* died Feb. 16, aged 46, of a heart attack.

Dunshee, Jay Dee, Phoenix, Ariz.; born in Milton, Iowa, Dec. 30, 1884; State University of Iowa College of Medicine, Iowa City, 1908; served in France during World War I; past-president of the Southern California Society for Mental Hygiene; for many years member of the board of directors of the Los Angeles and Pasadena Child Guidance Clinic; fellow of the American Public Health Association; director of child welfare in Los Angeles from 1921 to 1926; health officer of the city of Pasadena from 1929 to 1934, when he became director of the California State Department of Public Health, serving until 1935; in 1935 became public health adviser in the department of public welfare of Idaho and later director of the division of public health and medical director of state mental institutions; from 1937 to 1944 director of local health administration and communicable disease control in the Arizona Department of Health; in 1945 served as principal medical officer at the Poston Relocation Center in western Arizona; died Jan. 28, aged 71, of myocardial infarction and coronary thrombosis.

Kobak, Disraeli William ⊕ Chicago; born in 1887; University of Illinois College of Medicine, Chicago, 1913; specialist certified by the American Board of Physical Medicine and Rehabilitation; formerly on the faculty of his alma mater; member of the American Society of Physical Medicine; served as president of the American Congress of Physical Medicine, which in 1940 bestowed on him an award of merit for scientific contributions to the field of physical therapy; in 1933 the University Palms, Grade Officer d'Academie, was conferred on him by the French government in recognition of his work in physical therapy; in 1937 received from Belgium the diploma and insignia of a commander of the Royal Order of St. George; head of the physical therapy division of the Oak Forest (Ill.) Infirmary and the Cook County Hospital; served as director of the physical therapy department at Presbyterian Hospital; editor emeritus of *Archives of Physical Medicine and Rehabilitation;* died in the Wesley Memorial Hospital Feb. 17, aged 69, of leukemia.

Desmond, Michael Ambrose ⊕ Santa Monica, Calif.; born in Rushford, Minn., Jan. 15, 1882; University of Illinois College of Medicine, Chicago, 1903; fellow of the International College of Surgeons and the American College of Surgeons; member of the Association of Military Surgeons of the United States; served during World War I; for many years on the staff of the Santa Monica Hospital; on the staff of St. John's Hospital; past-president of the Santa Monica Rotary Club; died in the Stanford University Hospital, San Francisco, Jan. 9, aged 73, of fracture of the sixth and seventh cervical vertebrae with compression of the spinal cord sustained in a fall while disembarking from a liner toward the end of a world tour.

Adamsons, Ilga, New York City; Laval University Faculty of Medicine, Quebec, Canada, 1953; resident, St. Vincent's Hospital; died Nov. 1, aged 30.

Allen, Francis Withers ⊕ Tucson, Ariz.; University of Missouri School of Medicine, Columbia, 1898; for many years county health officer; died in the Tucson Medical Center Feb. 16, aged 82, of arteriosclerotic heart disease.

Ash, William Snively, Detroit; Hahnemann Medical College and Hospital, Philadelphia, 1905; for many years medical director of the Detroit plant of the United States Rubber Company; died Feb. 10, aged 71, of carcinoma of the bladder.

⊕ Indicates Member of the American Medical Association.

Ball, Charles Edward ✠ Fort Worth, Texas; Jefferson Medical College of Philadelphia, 1923; specialist certified by the American Board of Otolaryngology; staff member of the Harris, Fort Worth Children's, Pennsylvania Avenue, and St. Joseph's hospitals; died Jan. 22, aged 57.

Bornstein, Jack Jacob ✠ Brooklyn, N. Y.; Friedrich-Wilhelms-Universität Medizinische Fakultät, Berlin, Prussia, Germany, 1932; member of the Brooklyn Committee of the Arthritis and Rheumatism Foundation; on the staffs of the Maimonides and Kings County hospitals; died Feb. 13, aged 52.

Bovik, Leslie Enwroth ✠ Lake Forest, Ill.; Chicago College of Medicine and Surgery, 1915; past-president of the Lake County Medical Society; fellow of the American College of Surgeons; served during World Wars I and II; member and past-president of the staffs of the Victory Memorial and St. Therese hospitals in Waukegan and staff member of the Lake Forest Hospital, where he died March 5, aged 64.

Carrig, Milton Henry ✠ Erie, Pa.; Creighton University School of Medicine, Omaha, 1924; member of the Industrial Medical Association; at one time vice-president of the Nebraska State Medical Association; served during World Wars I and II; employed by the General Electric Company; died in St. Vincent's Hospital Jan. 29, aged 55, of bronchopneumonia and cancer.

Clark, Daniel G., Harrisburg, Ore.; Willamette University Medical Department, Salem, 1899; died Jan. 25, aged 82.

Cleverdon, Lawrence A., Stillwater, Okla.; Medico-Chirurgical College of Kansas City, Mo., 1901; an associate member of the American Medical Association; member of the Florida Medical Association; served on the staff of the Stillwater Municipal Hospital, where he died Jan. 10, aged 82, of cardiac decompensation and coronary insufficiency.

Cohan, Abraham, Boston; College of Physicians and Surgeons, Boston, 1915; served on the staff of the Beth Israel Hospital; died Jan. 10, aged 70, of a heart attack.

Corbett, Mitchell Samuel ✠ Chicago; Jenner Medical College, Chicago, 1911; member of the Industrial Medical Association; for many years physician for the Illinois Athletic Commission; served as staff physician for the Chicago Stadium and on the medical staff of the Chicago Park District; an emeritus member of the staffs of Norwegian American and Walther Memorial hospitals; founder and head of the Corbett Clinic; died in the Presbyterian Hospital Feb. 29, aged 72, of carcinoma of the stomach.

Craft, Wiley Boone, California, Pa.; University of Louisville (Ky.) School of Medicine, 1927; interned at the McKeesport (Pa.) Hospital; served during World War I; died Jan. 4, aged 59, of coronary occlusion.

Crump, George Albert, Asheville, N. C.; Bellevue Hospital Medical College, New York City, 1893; an associate member of the American Medical Association; formerly practiced in New York City; served on the staff of the Mount Vernon (N. Y.) Hospital; died Jan. 15, aged 86, of chronic myocarditis and arteriosclerosis.

Defnet, William Anthony ✠ Detroit; Detroit College of Medicine, 1911; specialist certified by the American Board of Otolaryngology; emeritus professor of otolaryngology at his alma mater, now known as the Wayne University College of Medicine; member of the American Academy of Ophthalmology and Otolaryngology; on the staff of the Harper Hospital, where he died Feb. 1, aged 70, of cerebral embolism.

Delany, Lemuel Thackara, Raleigh, N. C.; Leonard Medical School, Raleigh, 1911; on the staff of St. Agnes Hospital, where he died Jan. 9, aged 67, of coronary occlusion, pulmonary edema, and arthritis.

Dubpernell, Karl ✠ Detroit; Physio-Medical College of Indiana, Indianapolis, 1896; member of the American Academy of General Practice; from 1911 to 1938 city physician; died in the Grace Hospital Dec. 5, aged 83, of cerebral hemorrhage.

Dunaway, Louis T., Eldorado Springs, Mo.; St. Louis College of Physicians and Surgeons, 1893; died in the Nevada City (Mo.) Hospital Dec. 10, aged 87, of coronary thrombosis with posterior myocardial infarction.

Earnhardt, John Martin, St. Clair Shores, Mich.; University College of Medicine, Richmond, 1913; served during World War I; for many years on the staff of St. Joseph Hospital in Mount Clemens, where he died Dec. 21, aged 72, of peritonitis, cardiac arrest, and anemia.

Elston, George B. ✠ Kansas City, Mo.; University Medical College of Kansas City, Mo., 1907; died Feb. 5, aged 76, of coronary thrombosis.

Englehart, Ernest Erwin ✠ Hartford, Conn.; Kaiser-Wilhelms-Universität Medizinische Fakultät, Strassburg, Germany, 1918; served as medical officer of the Hartford regional office of the Veterans Administration; died Jan. 4, aged 62, of a cerebral hemorrhage.

English, William Franklin, Glendale, Calif.; Saginaw (Mich.) Valley Medical College, 1900; served during World War I; formerly member of the Michigan State Board of Health and the Michigan State Board of Medical Examiners; for many years practiced in Saginaw, Mich., where he was county health officer, member and president of the board of education, and county coroner; died in the Veterans Administration Hospital Jan. 12, aged 88, of cerebral thrombosis.

Ensing, Osborn Harris Burnett ✠ Detroit; University of Michigan Medical School, Ann Arbor, 1921; fellow of the American College of Surgeons; veteran of World War I; member of the board of trustees of Kalamazoo College and trustee of William Angell Foundation; on the staff of the Grace Hospital, where he died Dec. 17, aged 60, of cancer of the lung.

First, Frank H. ✠ Rock Island, Ill.; Rush Medical College, Chicago, 1897; for many years trustee of the Shurtleff College in Alton; on the staffs of the Lutheran Hospital in Moline and St. Anthony's Hospital in Rock Island, where he died Jan. 7, aged 84, of aplastic anemia.

Flax, Jacob Louis ✠ Newark, N. J.; Jefferson Medical College of Philadelphia, 1923; fellow of the American College of Surgeons; associated with Newark Beth Israel Hospital; on the courtesy staffs of the Babies' Hospital-Coit Memorial, Presbyterian Hospital, and Hospital of St. Barnabas and for Women and Children; died in Miami Beach, Fla., Jan. 23, aged 56, of coronary disease.

Fowler, Stephen Adolphus ✠ Chattanooga, Tenn.; Chattanooga Medical College, 1899; died in the Wildwood (Ga.) Sanitarium and Hospital Jan. 11, aged 83, of arteriosclerotic heart disease and congestive failure.

Froelich, Joseph Conon ✠ Newark, N. J.; University of the South Medical Department, Sewanee, Tenn., 1900; served as alderman; on the staffs of the Presbyterian and St. James hospitals; died Jan. 10, aged 86, of coronary occlusion.

Furniss, Henry Watson ✠ Bristol, Conn.; Howard University College of Medicine, Washington, D. C., 1891; died Dec. 20, aged 87, of pneumonia, cerebral hemorrhage, and pulmonary embolism.

Gallagher, Thomas Morton ✠ Newton, Mass.; Harvard Medical School, Boston, 1898; medical examiner of the seventh Middlesex district for many years; served as a member of the board of aldermen; for two terms president of the Massachusetts Legal Medical Society; on the staffs of the Waltham (Mass.) Hospital, St. Elizabeth's Hospital in Boston, and the Newton-Wellesley Hospital; died Jan. 17, aged 83, of arteriosclerotic heart disease.

Gillette, Claude Wesley, Westport, Conn.; Jefferson Medical College of Philadelphia, 1895; served as health officer; on the staff of the Norwalk (Conn.) Hospital; died Dec. 22, aged 85, of arteriosclerotic heart disease.

Gindich, Morris Hyman ✠ Lake Villa, Ill.; Chicago Medical School, 1923; member of the staff of St. Therese's Hospital in Waukegan; died in Miami Beach, Fla., Feb. 26, aged 62, of myocardial infarction and arteriosclerosis.

Griffith, Morgan Everett ✠ Wilkes-Barre, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1910; for many years physician for the Coughlin High School football teams; on the staff of the Wyoming Valley Hospital, where he died Jan. 7, aged 76.

Hamrick, Russell Shelton ✠ St. Albans, W. Va.; University of Louisville (Ky.) School of Medicine, 1925; on the staffs of the Kanawha Valley Hospital in Charleston and the Herbert J. Thomas Memorial Hospital in South Charleston; died in Cincinnati Feb. 29, aged 57, of heart disease and pneumonia.

Hennan, Clarence William ✠ Chicago; Chicago College of Medicine and Surgery, 1917; member of the Industrial Medical Association; past-president of the Chicago Society of Industrial Medicine and Surgery; on the staff of the Jackson Park Hospital; died in the Michael Reese Hospital Feb. 28, aged 61.

Hines, Clarence Reynolds ✠ Amesbury, Mass.; Boston University School of Medicine, 1907; fellow of the American College of Surgeons; associated with the Worcester Memorial Hospital, where he was chief surgeon and chairman of the medical board, the Anna Jaques Hospital in Newburyport, and the Amesbury (Mass.) Hospital, where he died Jan. 28, aged 75, of renal cell carcinoma.

Hopwood, George Black ✠ Confluence, Pa.; Jefferson Medical College of Philadelphia, 1906; anesthetist and consultant, Price Hospital; died in West Chester Dec. 20, aged 77, of myocardial infarction and coronary sclerosis.

Horning, Frank, Hellam, Pa.; Jefferson Medical College of Philadelphia, 1896; an associate member of the American Medical Association; died Nov. 16, aged 79, of pneumonia and arteriosclerosis.

Howard, James Gilbert, Richmond Hill, N. Y.; Long Island College Hospital, Brooklyn, 1910; an associate member of the American Medical Association; on the staffs of the Bushwick Hospital in Brooklyn and the Jamaica (N. Y.) Hospital; died Jan. 9, aged 78.

Huey, Thomas Ford ✠ Anniston, Ala.; Medical Department of Tulane University of Louisiana, New Orleans, 1901; director of the Commercial National Bank; on the staff of the Anniston Memorial Hospital, where he died Jan. 21, aged 77, of coronary thrombosis.

Hughes, Arranda Alphonso, Sr., Houston, Texas; College of Physicians and Surgeons, Memphis, Tenn., 1910; specialist certified by the American Board of Otolaryngology; a lieutenant commander in the Naval Reserve; served as a medical examiner for the Bureau of Air Commerce; on the staffs of St. Joseph's Hospital and the Hermann Hospital; died Jan. 8, aged 68, of cerebral hemorrhage.

Ingersoll, Olive Grace Perry, Adams, Wis.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1898; died in the Adams-Friendship Hospital Dec. 20, aged 82, of diabetes mellitus and arteriosclerosis.

Ireland, Edwin McCormick ✠ Coats, Kan.; University Medical College of Kansas City, Mo., 1910; served as county health officer; died in the Veterans Administration Hospital, Topeka, Jan. 9, aged 74, of coronary occlusion with infarction.

Jones, John Robert ✠ Orinda, Calif.; McGill University Faculty of Medicine, Montreal, Canada, 1943; interned at the Montreal General Hospital; later a fellow in surgery at the Mayo Foundation in Rochester, Minn.; on the staffs of the Alta Bates Community and Herrick Memorial hospitals in Berkeley; died Jan. 18, aged 37, of chronic nephritis.

Jordan, Elverse Morris ✠ Green Bay, Wis.; University of Texas School of Medicine, Galveston, 1923; past-president of the Brown-Door-Kewaunee Counties Medical Society; served during World War I; on the staffs of the St. Vincent's and St. Mary's hospitals; member and past-president of the staff of the Bellin Memorial Hospital, where he died Dec. 6, aged 59, of coronary thrombosis.

Jordan, Harry James ✠ Uniontown, Pa.; Georgetown University School of Medicine, Washington, D. C., 1931; specialist certified by the American Board of Obstetrics and Gynecology; fellow of the American College of Surgeons; formerly on the staffs of St. Francis Hospital, where he interned, Passavant, and St. Joseph's hospitals in Pittsburgh; died in the Memorial Hospital in New York City Jan. 5, aged 49, of carcinoma of the lung.

Kenney, Thomas Hopper ✠ Northampton, Mass.; University of the South Medical Department, Sewanee, Tenn., 1908; for many years city physician; at one time member and chairman of the board of health; served during World War I; for many years on the staff of the Cooley Dickinson Hospital, where he died Jan. 29, aged 72, of cerebrovascular accident, bronchopneumonia, and general arteriosclerosis.

Koss, Max, Brooklyn, N. Y.; Long Island College Hospital, Brooklyn, 1918; died Oct. 13, aged 60, of coronary thrombosis.

Laurence, John Gordon ✠ Baldwin, N. Y.; Dalhousie University Faculty of Medicine, Halifax, Nova Scotia, 1925; served during World War II; associated with South Nassau Communities Hospital and Mercy Hospital in Rockville Centre; died Jan. 20, aged 56, of heart disease.

Lazarus, David, St. Petersburg, Fla.; Cornell University Medical College, New York City, 1904; specialist certified by the American Board of Obstetrics and Gynecology; served on the faculty of New York Polyclinic Medical School and Hospital in New York City; fellow of the International College of Surgeons; died Feb. 6, aged 71, of cerebral thrombosis.

Lee, Henry Grady ✠ Millen, Ga.; University of Georgia Medical Department, Augusta, 1920; past-president of the Rotary Club; died in Augusta Dec. 26, aged 65, of cerebral thrombosis, hypertension, and arteriosclerosis.

Lessing, Albert ✠ Quincy, Ill.; Harvey Medical College, Chicago, 1903; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1905; died Jan. 19, aged 79, of coronary occlusion.

McCluer, Barton Bates, Rock Bridge Baths, Va.; Medical College of Virginia, Richmond, 1912; served during World War I; died in Atlantic Beach, Morehead Township, N. C., Nov. 15, aged 67, of pulmonary edema and valvular heart disease.

McKee, Edwin David, St. Petersburg, Fla.; Western Pennsylvania Medical College, Pittsburgh, 1889; an associate member of the American Medical Association; died Nov. 27, aged 92, of pyelonephrosis, prostatic obstruction, and arteriosclerosis.

McKibben, Clovis Litle, Ontario, Calif.; University of Cincinnati College of Medicine, 1924; fellow of the American College of Physicians; died Jan. 21, aged 58.

McLain, Andrew Demetrius ✠ Salem, Ala.; Medical College of Alabama, Mobile, 1901; past-member of the county board of health; on the staff of the Lee County Hospital in Opelika, where he died Jan. 22, aged 80, of arteriosclerotic heart disease.

Mamlok, Hans Walter ✠ Akron, Ohio; Rheinische Friedrich-Wilhelms-Universität Medizinische Fakultät, Bonn, Germany, 1934; served during World War II; died Jan. 20, aged 47.

Mandeville, Ernest Arthur ✠ Holyoke, Mass.; Tufts College Medical School, Boston, 1919; at one time on the faculty of his alma mater; on the staffs of the Providence and Holyoke hospitals; died in the Soldiers' Home Jan. 26, aged 62, of cerebral thrombosis with right hemiplegia and arteriosclerosis.

Marxmiller, Harry George, North Hollywood, Calif.; Medical College of Ohio, Cincinnati, 1897; served with the British Army and U. S. Army during World War I; died in the Veterans Administration Hospital in Los Angeles Jan. 27, aged 78, of bronchopneumonia and arteriosclerosis.

Miller, Charles Scott ✠ Traverse City, Mich.; Temple University School of Medicine, Philadelphia, 1914; formerly on the faculty of his alma mater; served during World War I; health officer of Mecosta-Osceola Health Unit; formerly practiced in Philadelphia, where he was on the staffs of the Philadelphia General, Temple University, Northeastern, and Northwestern General hospitals; on the staff of the Traverse City State Hospital; died in the Blodgett Memorial Hospital in Grand Rapids Jan. 29, aged 64, of carcinoma of the right lung and asthma.

Mills, Frank Wilbur ✠ Ottumwa, Iowa; College of Physicians and Surgeons of Chicago, 1893; served during World War I; for four years county coroner; formerly member of the local commission of insanity; died in St. Joseph Hospital Jan. 15, aged 87, of coronary thrombosis.

Moore, William A., Alapaha, Ga.; Southern Medical College, Atlanta, 1892; died Dec. 12, aged 87, of pneumonia.

Morin, John B. ⊕ Detroit; Detroit Homeopathic College, 1908; on the staff of the Lincoln Hospital; died Jan. 16, aged 88, of uremia and bronchopneumonia.

Morrall, Samuel A. ⊕ Graniteville, S. C.; Medical College of the State of South Carolina, Charleston, 1905; died in the Aiken County Hospital in Aiken Dec. 14, aged 75, of progressive muscular dystrophy.

Neal, Charles Allen, Nicholasville, Ky.; University of Louisville School of Medicine, 1927; secretary of the Jessamine County Medical Society; member of the Kentucky State Medical Association; served as mayor; died in the Good Samaritan Hospital, Lexington, Oct. 27, aged 57, of cerebellar hemorrhage and hypertension.

O'Connor, Thomas Walter, Denver; Denver College of Medicine, 1898; died in the Mercy Hospital Jan. 20, aged 82, of pneumonitis of the left lung.

Osburn, Burt Frank, Baudette, Minn.; Minneapolis College of Physicians and Surgeons, 1906; died Oct. 10, aged 85, of gastric hemorrhage and gastric ulcer.

Penn, Moise, Brooklyn, N. Y.; Universität Bern Medizinische Fakultät, Switzerland, 1922; on the staff of the Beth Moses Hospital; died Jan. 12, aged 65, of coronary disease.

Peters, John ⊕ Oak Park, Ill.; Chicago College of Medicine and Surgery, 1912; member of the American Academy of Allergy and the American College of Allergists; fellow of the American College of Physicians; past-president of the Chicago Society of Allergy; formerly health commissioner of Maywood; for many years senior member on the staff of the Oak Park Hospital, where he was president of the staff and where he died Jan. 29, aged 65, of acute coronary occlusion.

Pike, Ernest Reginald ⊕ Silver Spring, Md.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1898; died in the Central Dispensary and Emergency Hospital, Washington, D. C., Dec. 18, aged 83, of perforation of the gallbladder and bile peritonitis.

Poole, William I., Calvert City, Ky.; Chattanooga (Tenn.) Medical College, 1902; member of the Kentucky State Medical Association; died Dec. 17, aged 75, of heart disease.

Raines, Hugh Robert ⊕ Memphis, Tenn.; Vanderbilt University School of Medicine, Nashville, 1920; assistant professor of urological surgery at the University of Tennessee College of Medicine; county coroner; physician for the police and fire department; served during World Wars I and II; member of the American Urological Association; died in St. Joseph Hospital Jan. 13, aged 62, of cerebral hemorrhage.

Reibstein, Harry Bennett ⊕ Brooklyn, N. Y.; Long Island College Hospital, Brooklyn, 1912; fellow of the American College of Chest Physicians; member of the American Trudeau Society; on the staffs of the Kings County Hospital and the Beth-El Hospital, where he died Jan. 11, aged 65, of adenocarcinoma of the prostate.

Reneker, George Wirt, Falls City, Neb.; Northwestern Medical College, St. Joseph, Mo., 1893; served in the state legislature and as school physician and county coroner, local surgeon for the Burlington Railroad; died in the Community Hospital Jan. 1, aged 91, of heart block and Adams-Stokes disease.

Richards, Cyril Godfrey ⊕ Kenosha, Wis.; Tufts College Medical School, Boston, 1910; member of the American Urological Association; fellow of the American College of Surgeons; past-president of the Kenosha County Medical Society; past-president of the Wisconsin Urological Society; on the staffs of the Kenosha and St. Catherine's hospitals; died Jan. 31, aged 71.

Richie, Elisha Roberts, La Habra, Calif.; Hahnemann Medical College and Hospital of Philadelphia, 1902; member of the Medical Society of the State of New York; an associate member of the American Medical Association; formerly practiced in Brewster, N. Y.; died Jan. 5, aged 78.

Richman, Samuel Herbert, Evanston, Ill.; Northwestern University School of Medicine, Chicago, 1909; specialist certified by the American Board of Radiology; member of the American College of Radiology; formerly on the staff of the Veterans Administration Hospital in Jackson, Miss.; served during World Wars I and II; died in Sarasota, Fla., Feb. 9, aged 72.

Ross, Wilbur Wesley ⊕ La Porte, Ind.; Northwestern University Medical School, Chicago, 1908; also a graduate in pharmacy; served during World War I; on the staffs of the Holy Family and Fairview hospitals; died Dec. 8, aged 78, of coronary occlusion.

Shuman, Paul Anderson, Nashville, Ga.; University of Georgia Medical Department, Augusta, 1912; for many years county physician; died in Valdosta Jan. 24, aged 70, of polycythemia and cerebral hemorrhage.

Silverberg, Minor D. ⊕ Pittsburgh; Detroit College of Medicine and Surgery, 1931; instructor of pediatrics at the University of Pittsburgh School of Medicine; associated with the city health department; served during World War II; on the staffs of the Children's Hospital and Montefiore Hospital, where he died Feb. 2, aged 51, of acute myocardial infarction.

Simpson, Nathaniel Norvin ⊕ Henryetta, Okla.; Kentucky School of Medicine, Louisville, 1893; died in the Henryetta Hospital Jan. 8, aged 86, of cerebral hemorrhage.

Smith, John May, Magnolia, Miss.; Medical Department of Tulane University of Louisiana, New Orleans, 1907; died in the Beacham Memorial Hospital Feb. 24, aged 69, of carcinoma of the lung.

Stanchfield, Harve Avery ⊕ Dillon, Mont.; University of Minnesota Medical School, Minneapolis, 1933; member of the American Academy of General Practice; died Jan. 9, aged 57, of coronary disease.

Stokes, Henry Archer, St. Paul; University of Tennessee College of Medicine, Memphis, 1914; died Nov. 11, aged 77, of cerebral hemorrhage, arteriosclerosis, and hypertension.

Sullivan, William Terrence ⊕ Kelleys Island, Ohio; Kentucky School of Medicine, Louisville, 1895; health officer; on the staff of the Good Samaritan Hospital in Sandusky; died Jan. 8, aged 87, of heart disease.

Walton, Lief Elmer ⊕ Pennsboro, W. Va.; Medical College of Virginia, Richmond, 1914; a member of the staff of the Camden-Clark Memorial Hospital in Parkersburg; member of the Academy of Medicine of Parkersburg; died Jan. 18, aged 67, of coronary occlusion.

Wehr, Charles Jesse, Bellevue, Ohio; Western Reserve University Medical Department, Cleveland, 1901; served on the board of education and as city councilman; on the staff of the Bellevue Hospital; died Jan. 7, aged 80, of arteriosclerotic heart disease.

White, Thomas Wistar ⊕ St. Louis; University of Virginia Department of Medicine, Charlottesville, 1907; specialist certified by the American Board of Pediatrics; served on the faculty of St. Louis University School of Medicine; on the staffs of St. Mary's Group, De Paul, and Missouri Baptist hospitals, and St. Luke's Hospital, where he died Jan. 17, aged 76, of ruptured aortic aneurysm.

Woods, John Olen ⊕ New Castle, Pa.; University of Pittsburgh School of Medicine, 1920; specialist certified by the American Board of Internal Medicine; fellow of the American College of Physicians; medical director of the rheumatic fever clinic, Pennsylvania State Department of Health; chief of the medical service, Jameson Memorial and New Castle hospitals; an examiner for the Equitable Life Insurance Company of Iowa; died in the Jameson Memorial Hospital Feb. 17, aged 59, of cerebral hemorrhage with hemiplegia and coronary heart disease.

CORRECTION

Upham, Roy.—In the obituary of the late Dr. Roy Upham (THE JOURNAL, March 10, page 889) it was stated that Dr. Upham was secretary general of the American Gastroenterological Association. This was an error. He was secretary general of the National Gastroenterological Association, which later became the American College of Gastroenterology.

FOREIGN LETTERS

AUSTRIA

Technique of Cervical Biopsy.—At the meeting of the Austrian Society of Gynecologists and Obstetricians in Vienna on Dec. 13, Dr. V. Grünberger stated that in cervical erosion the number of exploratory excisions can be reduced by such special studies as colposcopy, Papanicolaou test, and colpomicroscopy. Exploratory excisions are necessary only if the results of these special studies are inconclusive. The pyramid-shaped excision has the disadvantage that one does not know definitely whether the excision has been made at the correct location. Furthermore, if the results are negative, it is impossible to perform electrocoagulation of the residual erosion because of the recent sutures. The ring biopsy recommended by Ayre is preferred, but with this technique hemostasis frequently is difficult. The speaker advocates transverse-oval, flat circumcision of the erosion in healthy tissue with the aid of the morcellation meter, placing hemostatic sutures at 6 and 12 o'clock, and suture of wound surface with deep sutures from above downward, so that a transverse lineal suture results. This technique was used with excellent cosmetic results in 14 patients. After a preceding curettage of the cervical canal and the uterine cavity, the obtained tissue ring was divided with the knife in eight sectors on the average. These sectors were studied microscopically, four different layers being examined in most cases. By this method a carcinoma is detectable or can be excluded in nearly 100% of the cases.

Genital Tuberculosis in Women.—At the same meeting, Dr. H. Knaus reported on 82 women with genital tuberculosis. The diagnosis of tuberculosis was confirmed microscopically by the pathologist from a study of the removed oviducts. The following conclusions were made from the results of systematic therapy: 1. The initial localization of the genital tuberculosis always occurs in the ampullar portion of the oviduct. 2. Tuberculosis of the peritoneum in women is almost always secondary to the disease in the oviducts and occurs and continues only so long as the abdominal ends of the tubes are patent. As soon as the tubes are closed by the inflammatory process, tuberculosis of the peritoneum no longer exists, and the same holds true after the extirpation of the specifically involved oviducts. 3. The tuberculosis of the tubes and peritoneum may be cured most rapidly by surgical removal of both tubes, which should be carried out as soon as the diagnosis of tubal or peritoneal tuberculosis is made. After the speaker had obtained a successive series of uninterrupted successes in the surgical treatment of tubal and peritoneal tuberculosis, a 24-year-old patient died under dramatic circumstances. The patient had been admitted with a diagnosis of febrile endometritis following abortion. A firm tumor was detected on vaginal examination of the patient on Oct. 26, 1955. This tumor extended over the midline between the symphysis and the umbilicus. In shape and consistency it was not similar to a pregnant uterus, and an extensive exudate was observed behind the tumor in the rectouterine excavation. Puncture, carried out immediately through the vagina, surprisingly yielded 500 cc. of clear yellow exudate, which suggested the presence of an intra-abdominal abscess in the neighboring area. The patient, therefore, was given penicillin, streptomycin, and from the fifth day on 200 mg. of tetracycline per day. Since the patient's condition did not improve, laparotomy was performed on Nov. 4, and a tumor of the appearance of a uterine sarcoma was removed with both adnexa, which could not be differentiated. Because of persistent fever, the patient was given 1 gm. of oxytetracycline intravenously every day for four days. This therapy was discontinued because of diarrhea and vomiting. The patient died on Nov. 12, and autopsy revealed the cause of death to be a severe pseudomembranous suppurative and necrotizing acute colitis, secondary to treatment with oxytetracycline and tetracycline. Microscopic examination of the operative specimen revealed a chronic tuberculous bilateral salpingitis and right oophoritis. The patient was the victim of a chain of disastrous circumstances. First there was the suspicion of criminal abortion. A laparotomy was performed in 1948 for alleged appendicitis, but the appendix had not been removed because tuberculosis of the peritoneum was detected. A biopsy specimen was taken, and on this basis a diagnosis of foreign-body tuberculosis was made. For this reason no antituberculosis therapy was given. The total excision of the uterus was too radical an operation, considering the patient's general condition and the fact that excision of the adnexa alone would have been sufficient. Primary closure of the abdomen was performed, although it would have been better to carry out drainage according to Mikulicz' technique, a procedure that would have taken the burden from the abdominal cavity. Finally, because the patient was given too many antibiotics, a severe enterocolitis developed and she died.

Prolapse of Arm in Presentation of Fetus.—At the same meeting, Dr. J. Spurny reported on a 30-year-old multipara with uterus arcuatus. Her first child weighed 2,250 gm. (4.9 lb.) and was delivered spontaneously. The second pregnancy was terminated in the third month by spontaneous abortion in 1954 despite the fact that the patient was under the care of a physician. The third pregnancy in 1955 was maintained through the fifth month by continued treatment with hormones, which were then discontinued. Rupture of the membranes occurred without labor pains on the ninth day before the expected date of delivery. On examination the os uteri was of the size of a small palm, and through it the right hand of the infant was presenting. In order not to endanger the infant, no attempt at extraction was made but a baby girl weighing 3,580 gm. (7.8 lb.) was delivered by cesarean section.

Ligation of Inferior Vena Cava.—At the meeting of the Society of Physicians in Vienna on Jan. 20, Dr. R. Imancic of Zagreb stated that for years ligation of the inferior vena cava has been recommended for patients with severe cardiac decompensation that does not respond to conservative treatment. Regardless of the cause of the decompensation, one may obtain a good, although only temporary, therapeutic result in a certain percentage of patients. The therapeutic effect and its subsequent diminution may be explained as follows. One of the main components in the development of decompensation lies in the rise of the venous pressure, particularly in the area of the inferior vena cava and its renal branches. Reduced excretion by the kidneys of electrolytes is one of the sequelae of this rise, and consequently an increased retention of electrolytes occurs. From the therapeutic viewpoint, it is important to reduce the pathologically increased pressure in the renal veins and thus to favor diuresis. By ligation of the inferior vena cava below the orifice of the renal veins, much of the blood supply to the lower extremities and the pelvis will be cut off. Since the blood volume in the inferior vena cava is thus greatly diminished, the pressure in this vein and in the renal veins drops, and this is manifested by a diuresis. The blood distal to the ligature flows through the collateral vessels into the superior vena cava and also partly through the collateral vessels into the inferior vena cava proximal to the ligature. In time these collateral vessels dilate. If this occurs in a short time in those vessels that enter the inferior vena cava, the venous pressure increases again, thereby reducing the therapeutic effect, but, if the collateral circulation develops mainly in the area of the superior vena cava, the venous pressure in the renal veins is not affected and the therapeutic effect is sustained for a longer time. Prof. F. Mandl stated that ligation of the inferior vena cava is not without risk. The ligature may cut through and result in a fatal hemorrhage. Kunos and Temesvari in 1954 proposed ligation of both iliac veins above the inguinal ligament.

The items in these letters are contributed by regular correspondents in the various foreign countries.

Atypical Forms of Amebiasis.—At the same meeting, Dr. A. Hahn of Zagreb said that amebiasis has now spread throughout Europe. Many patients have a chronic, masked form rather than the usual acute form of the disease. Vague intestinal disturbances, particularly in the form of colitis and constipation, are typical of these chronic forms, and in some patients abdominal symptoms simulating appendicitis may occur. Disturbances of the autonomic nervous system are also observed frequently.

Use of Pressure Sound in Treatment of Pyloric Stenosis.—At the meeting of the Society for Pediatrics in Vienna on Nov. 8, Dr. A. Solé stated that the clinical aspect of pyloric stenosis has two causal components: (1) congenital hypertrophy of the sphincter, presumably in the sense of a malformation, and (2) spasm of this muscle. Complete closure of the pyloric canal depends on the latter condition. Treatment must be aimed at removal of the spasm. In the course of surgical intervention this may be achieved by cutting muscle fibers of the sphincter. Dietetic treatment consists of the frequent administration of small amounts of concentrated food and the simultaneous administration of atropine methylnitrate (Eumydrin) to combat the spasm. Although this latter method is effective in many patients, its great disadvantages are that the sleep of the child is disturbed by the repeated feedings and that prolonged treatment is required. A new method, therefore, that consists of mechanical prevention of vomiting and simultaneous administration of adequate food is proposed. An apparatus devised for this purpose consists of a dropping tube, with an upward extension. The terminal portion of the tube is connected with a dropper similar to that used for continuous drip infusions, and the dropper is connected with a stomach tube by means of a glass extension piece. The sound, which should not be too thin, is lubricated with liquid petrolatum and introduced into the child's stomach through the nose. The dropping tube is filled with about 30 to 40 cc. of human milk, and this amount may be maintained by occasional refilling. The milk enters the stomach a drop at a time, the flow being regulated according to the need. The upper surface of the fluid is dusted with chlortetracycline to prevent bacterial contamination of the milk. With the aid of this system, the content of the stomach is kept under constant excess pressure that is sufficient to let it flow into the intestine even without gastric peristalsis, provided there is no spasm. When a spasm occurs, as always happens at the onset of the treatment, the stomach contents must be conveyed upward against the pressure of the fluid column. This places a limited burden on the stomach and acts to inhibit the spasms. The apparatus is so devised that even the most violent vomiting can not remove food from the system but can only move it upward. As soon as the spasm is relieved, the fluid returns to the stomach. It is important to use as thick a sound as possible to prevent an upward pressing of the liquid outside the tube. The spasms subside after a short time. The pressure sound can be removed after several days and normal feeding may be resumed. This treatment should be tried before an operation is resorted to.

Cystic Fibrosis.—At a meeting of the same society on Dec. 6, Dr. O. Stur reported on a 12-month-old girl who was admitted to the hospital in a severely dystrophic condition with bronchopneumonia. She had had a pertussoid cough since she was 2 months old, and she also had a celiaca-like disturbance of digestion. A diagnosis of pulmonary and pancreatic fibrosis was made. The duodenal juice showed traces of trypsin, was negative for diastase, and was positive for lipase. Schwachman's trypsin test, after the administration of pancreatic digestive juice, was negative. Fat absorption studies according to Silverman's technique showed a markedly decreased absorption. Sixteen hours after the ingestion of 5 cc. of Lipiodol, only small amounts of iodine were observed in the urine in a dilution of 1:4. After oral administration of protein there was hardly any increase of amino acid in the blood. After oral administration of starch the blood sugar curve was normal, thus ruling out celiac disease. Improvement resulted from treatment with antibiotics, pancreatic digestive juice, vitamins, and hyaluronidase inhalation. The patient died two months after admission of recurrent severe bronchopneumonia, caused by a highly resistant Micrococcus pyogenes var. aureus. Autopsy revealed a suppurative bronchopneumonia, with bronchiectasis and cystic fibrosis of the pancreas. Mild fibrosis of the pancreas is not rare but frequently is not recognized. A microscopic examination of the pancreas in infants who die of a pulmonary disturbance should always be made, since macroscopic examination of the pancreas may not reveal any lesions. Because the Coxsackie virus has been known to cause a cystic fibrosis of the pancreas, it should be looked for in patients suspected of having this disease.

Ovarian Hernia in Infants.—At the same meeting, Dr. F. B. Plechl-Exner reported on 26 infants who were operated on for 31 ovarian hernias. The weight of the patients at birth was below 1,500 gm. (3.3 lb.) in nine and below 2,000 gm. (4.4 lb.) in eight others. The weight at the time of the operation was below 2,000 gm. in two and below 3,000 gm. (6.6 lb.) in 13 others. The age at the time of the operation was less than one month in one, less than 2 months in eight others, and less than 3 months in seven others. Five patients showed symptoms of acute incarceration. Because all 31 patients had an uncomplicated postoperative course, it is suggested that such patients should be operated on in early infancy, even without urgent indications, for the preservation of ovarian function.

Treatment of Exstrophia of the Bladder.—At the meeting of the Austrian Society for Urology in Vienna on Jan. 25, Dr. Uebelhör said that the results of implantation of both the ureters into the large intestine and removal of the ectopic bladder are not ideal as far as permanent results are concerned. Several years ago a surgical technique was devised by Hart, which consists of establishing a wide anastomosis between the posterior wall of the ectopic bladder and the rectum, which anastomosis is closed after separation of the edges of the anterior wall of the ectopic bladder. This technique was practiced in a 17-year-old boy with highly satisfactory results. Healing was extremely satisfactory and rapid, and control by intravenous pyelography after the operation showed perfect function of this "intestinal bladder." The performance of an anastomosis between bladder and rectum also proved effective in selected patients with inoperable vesicorectal fistulas or vesicorectovaginal fistulas (closure of urethra or colpocleisis without disturbing the fistulous connections).

BELGIUM

Androgen Therapy.—At the third Meeting of French-Speaking Endocrinologists in Brussels, Bourg stated that testosterone is a useful agent in functional disorders in both sexes. Its masculinizing side-effects do not contraindicate its use in dysmenorrhea, menorrhagia, endometrioma, fibromyoma, and the menopause. However, only those patients whose conditions are associated with hyperestrogenosis are amenable to this therapy. The minimal effective dose should be used, and constant checking is necessary. The benefit obtained is often transitory and treatment must frequently be repeated. Testosterone must not be considered a panacea or a standard treatment for a given disorder, the mechanism of which is not clear. Weill and Bernfeld pointed out the good results that have been obtained in retarded growth in girls with the use of 2.5 to 5 mg. of testosterone propionate per week. There is no risk of virilization with this dosage. When used before puberty, the hormone inhibits the development of secondary sexual characteristics only slightly. In girls of puberal age treated with this drug, menstruation appears normally.

Lung Reactions to Dust.—Prof. J. Firket of Liege, in a report to the Congress of the International Academy of Legal and Social Medicine in Genoa, Italy, in October, drew attention to organic emanations that may be harmful to living beings. There is great clinical and radiological similarity between virus bronchopneumonia and the chronic pneumonitis caused by manganese, osmium, and beryllium. The occurrence of acute tuberculosis after massive inhalation of inert or relatively inactive dusts has been reported. The speaker saw a case of acute tuberculosis that developed after the accidental inhalation of calcium carbide mixed with water and acetylene containing phosphorized hydrogen and another case that developed within a few weeks after massive inhalation of dust near a dump for war machinery.

The mechanism might be prolonged congestion of the mucosa in the great or medium bronchi leading to softening and reactivation of neighboring caseous foci that have not become encysted or calcified since the primary infection.

Hemolytic Anemia.—At the Medical Meeting of Brussels, Lambin of Louvain stated that hemolytic anemia may be classified as due to intrinsic or to extrinsic changes in the corpuscles on the basis of the survival time of transfused red blood cells. Those of the first group, with the exception of the Marchiafava-Micheli syndrome, are due to a hereditary deficiency that may be connected with abnormal morphology or abnormal hemoglobin. In Belgium hereditary leptocytosis was introduced by Italian immigrants. The principle cause of the anemias in the second category is an immunologic mechanism. Great progress has been made in the identification of the antibodies responsible, but the factors causing the formation of these antibodies are not well known. The idiopathic forms are more amenable to treatment since the advent of cortisone and corticotropin. There are patients, however, in whom the hyperhemolysis does not yield to these hormones, even when splenectomy is performed.

Polycystic Kidney.—At the 20th Congress of the Belgian Urologic Society, it was stated that the prognosis for patients with polycystic kidney is poor. Nephrectomy gives good results in only a few cases. Removal of calculus has specific indications. Decapsulation of the kidney is a dangerous procedure that does not prolong the life of the patient. The resection of a large cyst is indicated if the excretory pathways are involved. Hematuria is not necessarily an indication for operation. Pain may mean that several large superficial cysts should be removed. Serious renal insufficiency is an absolute contraindication to operation. It was concluded that polycystic kidneys should not be treated surgically. Most so-called cysts are only dilated segments of nephrons. These cystoid nephrons have functional value and should be spared. The patients are delicate. Not only should operation be avoided but so also should retrograde pyelography and ureteral catheterization.

FRANCE

Trauma of Freezing.—In *Presse médicale* (**63**:1767, 1955), A. Lapras states that cold injury constitutes a vascular emergency as much as does arterial embolism and that the first few hours are the crucial ones. Measures to be avoided include: (1) energetic rubbing (gentle friction after proper lubrication of the skin is permissible at the beginning, provided no edema or blisters are present), (2) flagellation (mountain climbers rescued by well-meaning persons have sometimes been whipped with heavy cords in an attempt to "bring back the blood," which creates wounds that facilitate infection), (3) application of pressure bandages or plasters (such treatment cannot get rid of the edema because it neglects the cause of it), (4) débridement of lesions, because end-results are always better with regard to recovery of function than the initial lesions would seem to indicate and the powerful chemotherapeutic agents now available allow deferring of surgical measures, (5) local refrigeration, (6) violent rewarming (hot-water bottles must not be applied or the injured part placed near a fire, as this causes massive edema, extensive gangrene, and shock), and (7) ingestion of alcohol (during the Korean war, some physicians even went so far as to prohibit smoking for victims of freezing, because of the vasoconstrictive effect of nicotine).

The proper thing to do is to rewarm the frozen part gradually. In 1951, Fuhrman and Crismon advocated rapid rewarming at a temperature of 42 C (107.6 F). When the temperature of the injured area has become normal, the heating is stopped and the part is exposed at room temperature. Absolute asepsis is necessary in bandaging the part. If the lower extremities are involved, walking is strictly prohibited. Persons with frozen feet should remain in bed with the feet slightly elevated. General measures include rewarming of the trunk and antishock therapy combined with antibiotics. These measures suffice for the treatment of many cold injuries but do not prevent gangrene, which necessitates amputation in severe cases. Cortisone and corticotropin do not prevent gangrene.

If the patient has the good fortune to be taken promptly to a well-equipped medical station, there is a choice between artificial hibernation, sympathetic block, and anticoagulant therapy. Intra-arterial infusion is indicated. All the usual general and local measures are still necessary. If freezing has occurred more than 16 hours previous to admission, it is too late for anticoagulants and sympathetic block must be used. Recent research, however, has given hope that anticoagulants combined with phenylbutazone may be effective on organizing thrombi. If the patient is not treated until several days after injury, as is often the case with mountain-climbers or soldiers in time of war, neither artificial hibernation nor intra-arterial infusion can be applied, though infiltration is possible. Here heparin is of value, because intravenous administration is feasible and the coagulation time can still be determined. A patient who is frozen and in shock, and who is lying wrapped in a sleeping bag on top of a sled, can be given an intravenous injection in the cubital fossa more easily than a lumbar or stellate infiltration and with a good chance of success. Since heparin is rapidly eliminated, the dangers of overdosage are minimized. Since all parenteral therapy is difficult in these patients, every effort should be made to rewarm the trunk. Liquid, 3 or 4 liters, should be given by mouth, since infusions are impossible. Mountain climbers who camp out have devised the famous "tube" position, in which the hands are sheltered in the armpits and feet in the fold of a companion's groin.

Otolaryngological Meeting.—At the 53rd Congress of Otorhinolaryngology in Paris in October, Bourdial and his coworkers said that, although severe complications rarely accompany chronic otitis in children, the suppuration has a bad effect on the general condition and on hearing, with consequent personality disturbances in the child. Cholesteatoma occurs in about 23% of the children, as compared with 43% in adults. This lesion is more often found in chronic otitis of long standing. Surgical treatment should be given before cholesteatoma develops; in fact, it should be given as soon as chronicity is established. With the endaural approach, if modern techniques and antibiotics are used, surgical treatment is available to children of any age. Several successful operations have been performed on infants 12 and 13 months old. Draining, rather than curettage, should be employed, to avoid bone destruction and extensive mastoid resection. Atticotomy is the method of choice for young children, while in older children antroattic emptying is allowable. These conclusions are based on a series of 194 patients treated surgically, of whom 132 were adequately followed up. Chronic suppuration was dried up and hearing was preserved in 64%. Operation should be performed before much hearing loss has been suffered. Nasopharyngeal foci of infection should be eliminated, and any coexisting sinusitis should be treated. Poor standards of diet and hygiene are responsible for many cases of otorrhea.

At the same meeting, Mounier-Kuhn and Soulas stated that dysphagia may manifest itself as total obstruction, with inability to swallow even liquids, or simply as a difficulty in getting foods down. There may be pain on swallowing, which may be associated with pain in the chest, back, or precordium. Violent burning sensations may be present. Pain in the epigastrium, hiccoughing, and respiratory signs suggest hiatal hernia or ulcerative esophagitis. An asphyxiating cough is characteristic of malformations in the newborn infant and patients with esophagotracheobronchial fistulas. Small children may cry, refuse liquids, and be very restless. In the elderly, dysphagia is often atonic. Radiography with a contrast medium will help locate canalicular, parietal, and periesophageal anomalies. Esophagoscopy is indispensable. The cause of the dysphagia must be found if appropriate treatment is to be given. In many patients the cause is functional, but organic causes must be ruled out.

Arterial Hypertension.—The National Assizes of Medicine concluded at their meeting in Paris in October that hypertension is a symptom or syndrome rather than a disease and that it cannot be defined in millimeters of mercury or in terms of the causal or resultant visceral lesions accompanying it. Although few cases can be attributed to a specific, curable cause, a careful search should be made for adrenal tumor, stenosis of the aortic isthmus, and unilateral nephropathy. Systematic urography

should be practiced, especially in patients under 40 years of age. The prognosis of essential hypertension is independent of the figures obtained from blood pressure readings. Two poor prognostic signs are youth and a hereditary tendency to hypertension. The hypertension of old age is well tolerated. Even more important is the status of the cardiovascular system, as judged by eyeground examination and renal output. The drugs now available for the treatment of the syndrome have provided a great advance, even though they do nothing to modify the underlying cause. The strict diets formerly advised are no longer necessary, with the exception of salt restriction. A normal caloric intake should be maintained. Rest, an ordered daily routine, and the use of sedatives are sufficient to control moderate hypertension in many patients. The most important of the new drugs is Rauwolfia serpentina, which is reliable and well tolerated. The effects of methonium compounds and hydralazine are more difficult to control, and these drugs have certain contraindications. Moderate hypertension can be treated on an ambulatory basis with small doses, but in the severer forms hospitalization is often required.

Postvaccinal Encephalitis.—In response to a query by a French deputy, the Minister of Health stated that the large number of smallpox vaccinations performed during the first three months of 1955 (about 11 million) because of the epidemic in Brittany did not have any significant repercussions on the health of the nation, apart from the fact that the immunity of the population to smallpox was strengthened. Generalized vaccinia and encephalitis are rare but severe complications of vaccination. The relationship of encephalitis and vaccination has never been proved conclusively, and the results of the 1955 vaccination program give no evidence that is even suggestive of such a relationship. Although the number of doses of vaccine given in the first three months of that year was five times greater than the number given in all of 1954, there was no increase but rather a slight decrease in the number of cases of acute encephalitis. The number of deaths from encephalitis in the first trimester of 1955 was somewhat less than for the first trimester of each preceding year, whereas, if vaccination caused encephalitis, one would expect it to be higher. The few cases of generalized vaccinia occurring during the 1955 campaign were seen in persons with dermatosis, who should have been excluded from the program.

Sequelae of Gastrectomy.—K. Melissinos concluded from a study of 50 patients (*Arch. mal. app. digest.* **44:**1020, 1955) that anemia is the most frequent complication of gastrectomy. It occurred in 26 patients in his series; epigastric pain occurred in 13, diarrhea in 10, disorders in glucose regulation in 5, hepatitis in 4, gastrorrhagia in 4, tuberculosis in 4, and hypovitaminosis of the B complex in 3. Twenty-three of the 26 anemias were of the hypochromic type, and the other 3 were orthochromic. All of the anemias responded to the administration of iron either by mouth or parenterally. In a few patients disorders in the regulation of the blood sugar result in a diabetes clearly differing from pancreatic diabetes by its instability and its sensitivity to insulin. It is often impossible to discover the cause of epigastric pain following gastrectomy, a pain for which no treatment gives relief. Tuberculosis should not be considered a complication of gastrectomy but as an incident occurring in patients who for one reason or another undergo a serious diminution of their nutrition.

Thrombophlebitis of Pregnancy.—P. Morin and J. Chabrier (*Gynécologie et obstétrique*, no. 4, 1955) state that the thrombophlebitis seen in pregnant women does not differ from that occurring post partum, except that the onset is more insidious. No correlation between the course of a pregnancy and the appearance of thrombosis was noted. Phlebitis of pregnancy seems to be connected more with vascular disturbances than with trophic complications. The latter are usually unapparent. The eventual prognosis is good, although there may be immediate dysfunction. None of the tests used disclosed the changes characteristic of postpartum thromboembolic disease. The blood chemistry was normal; no protein imbalance was observed. Despite the fact that there is no real hemopathy in the phlebitis of pregnancy, the disorder should be treated with anticoagulants. The authors prefer heparin given intravenously because it is easy to give and does not cause a depletion of vitamin K. It has no harmful effect on the fetus. The remainder of the treatment is symptomatic.

Pleural Effusions in Asthmatic Patients.—Professor Turiaf of Paris, in *Semaine des hôpitaux de Paris* (**31:**4117, 1955), said that asthmatic patients may have two kinds of pleural effusion with eosinophils, one associated with a parenchymatous exudate and the other with a spontaneous pneumothorax. In either case the effusion develops slowly, is scanty, may be yellow and slightly turbid, and is rich in albumin. It does not last much longer than one week. Eosinophilia is characteristic of eosinophilic pneumonitis (Löffler's syndrome) with pleural effusion in the asthmatic and is probably a manifestation of allergy. The effusions associated with spontaneous pneumothorax are due to mechanical irritation of the pleura. Since the prognosis in these patients is always favorable, no special treatment is required.

Aminoaciduria in Children.—P. Royer and his co-workers state that the urine from 41 of 44 children affected by rickets and 4 of 7 suffering from hypocalcemic tetany was shown by means of paper chromatography to contain a notable increase of amino acids (*Semaine hôp. Paris* **32:**254, 1956). This hyperaminoaciduria disappears within two months of starting treatment with vitamin D_2 or vitamin D_3. Dihydrotachysterol, on the other hand, is ineffective. The authors conclude that hyperaminoaciduria is more or less directly related to a deficiency in vitamin D and not to a familial or constitutional factor predisposing to rickets as others have claimed.

SWITZERLAND

Hemorrhagic Colitis.—P. Krieg recently reported to the Vaud Society of Medicine in Lausanne that hemorrhagic colitis is becoming more common. In these patients there appear to exist both abnormal stimulation of the neurovegetative system and local predisposition in the colon. The best treatment for the condition is salazopyrin, an aspirin derivative, in doses of 7 or 8 gm. to start, and later of 4 or 5 gm. Cortisone and corticotropin are reserved for the severe cases. These agents may cause fulminating hemorrhage or perforation. P.-B. Schneider found a common psychological make-up in patients with colitis. Although first contact with them is easy because they are amiable and accept psychiatric examination readily, the psychiatrist soon finds a profound passive resistance: the patient insists he has no conflicts. Often he is in a state of dependency, especially toward a parental figure. The conflict may appear when this dependency is broken by marriage or death. The speaker reported on 14 patients with hemorrhagic colitis and 4 with mucous colitis. All the patients were pleasant, of extreme personal cleanliness, and apparently little disturbed by their illness. Their aggression was repressed. They had no initiative, were easily humiliated, and felt persecuted. In two, the role of psychic trauma was especially clear. Psychotherapy greatly benefited the digestive symptoms in one of them, but in the other analytically oriented psychotherapy created anxiety that temporarily aggravated the somatic manifestations.

Cardiac Surgery During Pregnancy.—P. Naef (*Méd. et hyg.* **14:** 46, 1956) states that pregnancy is always difficult to manage in cardiac patients. Modern surgery has completely transformed the prognosis of a number of cardiovascular diseases that had always been thought incurable. The author performed three successful cardiac operations in pregnant patients, two of whom had mitral stenosis and one of whom had patent ductus arteriosus. The author prefers to use the instrumental technique in mitral commissurotomy, in particular, the Dubost dilator. His case fatality rate in the past two years has been only 4.1%. The case fatality rate among pregnant cardiac patients is 6.4%, as against a rate of 0.17% for pregnancy as a whole. Acute cardiac insufficiency is at present the most frequent cause of death among pregnant women. Mitral commissurotomy during pregnancy has given excellent results. An operation performed at this time obviates the need for therapeutic abortion and does not increase the infant mortality. Not only is pregnancy not a contraindication to cardiac surgery, it is a supplementary reason for operation.

UNITED KINGDOM

Increase in Poliomyelitis.—According to the Registrar-General, the total number of cases of poliomyelitis reported in England and Wales in 1955 was 4,212, with 201 deaths. This is a marked increase over the previous year's figures, which were 1,224 reported cases and 76 deaths. There were fewer cases in 1953 than in 1955 (2,626) but more deaths (221).

London's Health.—According to the Report of the County Medical Officer of Health and Principal School Medical Officer for the Year 1954 (London, 1955), the birth rate was 15.2 per 1,000 persons. This shows a slight but steady decline since 1950, when it was 15.7. This figure, which is well in excess of the prewar rate of 13.4, is a little below the average of the last 21 years. The stillbirth rate was 19.8 per 1,000 live births. The infant mortality rate reached a record low figure of 20.7 deaths per 1,000 live births, compared with 23.9 per 1,000 live births in 1953. Of these, 15.1 occurred in the first four weeks of life, which was also a record low figure. The number of deaths resulting from pregnancy or childbirth, including postabortion deaths, was 37, which was also a record low figure. There has been a steady decline in the death rate to the lowest figure ever recorded, namely, 10.7 per 1,000 population. Heart disease accounted for nearly one-third of the deaths. Deaths from cancer showed a slight decrease to 2.31 from 2.34 in the previous year, but this disease is still the second leading cause of death. Only four confirmed reports of diphtheria were received, with no deaths. The number of cases of pertussis fell to 4,691 with only four deaths. The number of cases of scarlet fever was the lowest since 1941, and no deaths were reported from this disease or its complications. The number of cases of measles dropped to 7,445 with only two deaths. There was an alarming increase in cases of dysentery, with 4,268 reported—the highest ever recorded. The epidemic was under way at the beginning of the year and reached its peak in April, the heaviest incidence being among children of preschool age. There was also an increased incidence in school children. Food-borne outbreaks were rare, according to the report, and there is no evidence that the increase in the number of cases is due to infection through food. Children under 15 years of age are more likely to give rise to secondary spread and are more susceptible to secondary spread, than those over 15. Nearly half the cases reported had clinical symptoms, and in these the diagnosis was confirmed bacteriologically. Less than one-tenth were symptomless carriers. There was a clear association between the severity of the case with which the epidemic started and the resulting spread. The general opinion was that sulfonamides were of little value when infection was widespread. The number of cases of food poisoning, 1,060, was slightly lower than that of the previous year.

Changing Character of Tuberculosis.—The Ministry of Health recorded 7,897 deaths from all forms of tuberculosis in 1954, a reduction of 67% over the figures of six years ago. Before the war the ratio of reports of new cases of tuberculosis to deaths from this cause was constant at about 2:1, but today it is 5:1. A committee appointed by the Joint Tuberculosis Council has found that this declining death rate is associated with increased longevity in those who are cured. Tuberculous laryngitis, enteritis, and cervical adenitis are now almost never seen; in the pulmonary form the incidence of the round focus is increasing, unless it is being detected with greater frequency. There are great differences between the incidence and disease pattern in rural and urban areas and even in different towns in Great Britain. The case fatality rates in county boroughs range from 131 to 607 per million of population, and there are similar local variations in susceptibility and type of disease. Although deaths have declined, laboratory and clinical evidence shows that Mycobacterium tuberculosis is not becoming less virulent. New cases are found chiefly in two groups: young adults with primary infection progressing to the overt disease and older men in whom a flare-up of the disease contracted earlier in life leads to a breakdown in health. Preventive measures by public health authorities have reduced the chances of infection in the young adult but have scarcely touched the older men, who are still the main reservoir of infection. The proportion of tuberculous patients in this group is rising. The percentage of positive tuberculin reactors in the age group 17-20 is much lower in the United States than in the United Kingdom. In 1950, 10.6% of recruits in the United States Navy were positive reactors, compared with 65.6% reactors in young conscripts of the British forces. In 1954 the percentage of positive reactors in young American recruits dropped to 4.6. Chemotherapy has converted the positive sputum of many patients to negative for long periods and has thus diminished the risk of spreading infection. Against this must be balanced the possibility of producing resistant strains. Tuberculosis, though declining, has become a more chronic disease. The report of the Joint Tuberculosis Committee concludes that the intrinsic character of tuberculosis has not altered since the beginning of World War II, but the pattern of the disease is being progressively modified by various factors.

Barbiturate Poisoning.—Dr. Eileen Brooke (*Lancet* **1**:150, 1956) reports that deaths from barbiturate poisoning have been increasing yearly, until in 1954, the latest year for which figures are available, there were 575 such deaths. Deaths from gas poisoning also showed an increase, but deaths from the more violent causes (hanging, drowning, shooting, and the use of sharp instruments) diminished. Suicide rates from aspirin poisoning have increased, but not to anywhere near the same extent as from barbiturate poisoning. Barbiturates are now freely prescribed under the National Health Service and their potentialities are recognized by the would-be suicide. It is not generally known by the public how much aspirin must be swallowed to ensure death. The suicide rate from barbiturate poisoning is greater in women than men, probably due to the fact that these drugs are taken more frequently by women. Over the age of 65, twice as many women as men commit suicide by taking an overdose of a barbiturate. Of all prescriptions issued to National Health Service patients, 9.4% are for barbiturates or preparations containing them. From estimates of the Ministry of Health the annual consumption of barbiturates in the United Kingdom is about 50 tons. In one large hospital, of all patients who attempted suicide and were admitted alive during the last four years reported, barbiturates were the chosen agents in more than 80%. In all but 2 of 64 cases, the barbiturate was prescribed by the patient's general practitioner, and in more than 90% it was given for insomnia. An analysis of records from the General Register Office shows that in the last year for which figures are available 4,200 patients were treated for barbiturate poisoning, suggesting that nearly 14% of the patients treated die.

Modification of Action of Morphine.—The relief of the intractable pain of terminal carcinoma with morphine is bought at the price of respiratory depression, narcosis, and depression of the cough reflex. McKeogh and Shaw have used a combination of morphine and amiphenazole (DAPT, daptazole) to eliminate these undesirable side-effects (*Brit. M. J.* **1**:142, 1956). Amiphenazole is an analeptic rather than a true morphine antagonist, which counteracts morphine-induced respiratory depression, vomiting, narcosis, and depression of the cough reflex without affecting the analgesia. The pinhole pupil and constipation associated with the administration of morphine are also abolished. One hundred twenty-seven patients with carcinoma suffering from intractable pain were given large doses of morphine (65 to 195 mg.) and 20 to 60 mg. of amiphenazole parenterally at the same time. The harmlessness of the latter has been shown by the repeated administration of up to 300 mg. in healthy patients without any ill effects. By this means analgesia lasting eight hours was obtained, provided the dose of morphine was adequate, without most of the side-effects of the drug. After about two days' treatment and stabilization of the dose of morphine, the amiphenazole was given orally in doses of 20 to 60 mg. instead of parenterally. If vomiting occurred, cyclizine was given. There was no evidence of tolerance or addiction to morphine. The authors were impressed by the change in the mental outlook shown by 75% of the patients with inoperable carcinoma. After two weeks they took a renewed interest in life, in occupational therapy, and in hobbies. Depression of respiration and the cough reflex was prevented by amiphenazole, which was considered to act as a central nervous system stimulant.

Child Neglect and Intelligence.—Intelligence tests were given by Dr. Mary Sheridan to 100 mothers brought before the courts for the wilful neglect of their children and placed on probation (*Brit. M. J.* **1**:91, 1956). She found that the mean intelligence quotient of these mothers was well below that of the normal population. About 70% were found to be dull, backward, or worse. Of the 100 tested, 27 were classified as imbecile, idiot, or feeble-minded, 43 as dull and backward, 25 were normal, and 5 were of superior intelligence. Most of these women were found to be gentle, affectionate, and contented, but thoroughly incompetent. After having one or two children, they became overwhelmed and subsided hopelessly into dirt and squalor. They drifted on until some official body stepped in to rescue the children. In a study at Southampton, Ford and his co-workers ("Problem Families," Oxford University Press, 1955) showed that neglectful fathers were also often lacking in intelligence, and Wright (*M. Officer* **94**:381, 1955) reported that in 100 problem families there were 7 epileptics among the parents; 11 others were known to the mental health department; and 4 were certified mental defectives. The provision of help to these problem families only brought about temporary amelioration of conditions in some. Dr. Sheridan states that it seems incredible that women possessing such defective intelligence have remained in the ordinary community, their conditions apparently undiagnosed, long enough to marry and have children. Follow-up studies of the families are in progress. Of the mothers, 76 have derived benefit from training, but the remaining 24 have not.

Crisis in the Mental Hospitals.—The chairman of the mental hospitals committee of the Birmingham regional hospital board stated that in the mental hospitals, the beds are so close together that they have to be moved for the nurses to tend to troublesome patients at night. In some wards the temperature falls to 40 F and even 35 F in winter, with the moisture in patients' breath condensing, then freezing on the walls, which as a result become covered with mold. In seven years only 22% of the total capital expenditure of the regional board was spent on mental health. Many of the hospitals could be transformed if they were to be given a special allowance. The average cost of keeping a patient in a mental hospital for a week is just over $12, compared with $38 in a general hospital and $63 in a teaching hospital. A group of eight members of parliament made a tour of West Midlands mental hospitals and reported appalling overcrowding. They deprecate the system of making capital allocations on a year-to-year basis so that any money not spent in one year cannot be carried forward to the next. One of them stated that in one ward the beds were pushed together so that patients appeared to be in one great bed. Day rooms were filled with beds. The proportion of older patients admitted has grown; now a quarter are over 65 years of age.

Chlorpromazine in Tetanus.—Kelly and Laurence have used chlorpromazine in the treatment of the convulsions of tetanus (*Lancet* **1**:118, 1956). In a dose of 1 mg. per kilogram of body weight, it abolished spontaneous and reflex tetanic contractions for up to four hours in rabbits that had received tetanus toxin. Respiration was unaffected, and the animals were conscious. Promethazine had the same action, but only at a much higher dose level and for a shorter time. It was then felt justifiable to attempt to control human tetanic convulsions with chlorpromazine alone. The drug was given to a boy with tetanus by intravenous drip in doses of 15 to 40 mg., when required, over a period of 16 days. Consciousness was maintained, and respiration was unaffected. Feeding was by gavage, and the electrolyte balance was carefully controlled. The authors believe that, if the convulsions had not been controlled, the child would have died. The advantages claimed are that the patient is conscious and, therefore, cooperative, so that secretions can be readily removed from the mouth and throat, nursing is much easier, and respiration is not depressed. These factors minimize the risk of inhalation pneumonia. It is thought that chlorpromazine acts in tetanus by depressing spinal cord interneurons and the brain stem reticular formation.

Exchange Visits Between A. M. A. and B. M. A. Members.—Restrictions on currency export to dollar countries has severely limited the number of British physicians visiting the United States. A scheme for exchange visits between members of the American, British, and Canadian medical associations has been approved and will operate until further notice. Two physicians from the United Kingdom may visit Canada in exchange for two from that country. Each physician from the United Kingdom will be required to make all his own travel arrangements and can deposit up to $560 with the British Medical Association in London. On arrival in Canada he will receive the equivalent of his deposit in Canadian dollars. Each Canadian physician arriving in Britain will receive the sum deposited in sterling. Similarly two physicians from the United Kingdom may visit the United States in exchange for two from the United States. The duration of the visits will be left to the discretion of the physicians concerned. None of the associations will accept responsibility for a physician who allows his visit to outlast the money at his disposal. These arrangements should go a long way toward the interchange of physicians and ideas. Until now the traffic has been largely one way.

Treatment of Rosacea.—In the *British Journal of Dermatology* (**67**:421, 1955), Brodthagen describes the treatment of acne rosacea with quinacrine and chloroquine. Fifty-seven patients, aged 14 to 87, who had suffered from the disease for six months to 35 years were given 200 mg. of quinacrine twice daily for 10 days and then 100 mg. daily as a maintenance dose. A similar course of chloroquine therapy was given at twice this dosage level. The disease in these patients ranged from mild to severe, and in 38 of the 57 patients exposure to light or seasonal changes acted as a precipitating factor. In the two groups 18 became symptom-free, 10 improved, and 27 were unchanged. Of 23 whose condition was exacerbated by sunlight, 16 improved. Chloroquine produced dyspeptic symptoms in 9 patients but produced no yellow discoloration of skin as did quinacrine. The effect of the drugs was most marked in the months with the highest intensity of ultraviolet light and the most hours of sunlight. The effect of the drugs was thought to be due to their capacity to increase tolerance of light. This treatment should be reserved for patients in whom light has been definitely found by the patient to precipitate an attack.

Naturopath Criticized.—At an inquest at Huddersfield, Yorkshire, the coroner raised the possibility of a charge of manslaughter against a naturopath who had been treating the deceased, a 24-year-old man suffering from spinal curvature and pains in the feet, which he thought were due to rheumatism. He consulted the naturopath, who gave a hopeful prognosis after examining the patient and prescribed a low-calorie diet. This was rigidly adhered to for 15 months by the patient, who eventually died of malnutrition, according to the pathologist who performed the autopsy and who considered that it was a criminal act to maintain the patient on a diet of 1,500 calories daily. The naturopath admitted that he knew the diet provided only this number of calories, but he firmly believed it would cure rheumatism. The coroner told the jury that if they thought the naturopath had been so negligent as to cause death in a criminal way, a verdict of manslaughter should be considered. The jury returned a verdict of misadventure.

Vital Statistics of England and Wales.—The Registrar-General's Statistical Review of England and Wales, 1954 (Pt. 1, Her Majesty's Stat. Off.) shows that, of the total deaths of infants, 60% occurred during the first week after birth and 80% occurred in the first three months. The death rate for children aged 1 to 4 years was 0.94 per 1,000 population; it was 1.18 in 1953 and 12.08 in 1920. This shows a decline of 90% in 34 years. Deaths from accidents in the home increased to 6,617. Of these 72%, or 4,790, were deaths of older people aged 65 or over, the majority (4,188) being due to falls. Deaths from gas poisoning continue to increase. In 1954 they numbered 614, compared with 554 in 1953. There were 597 deaths due to fire or the explosion of combustible material. The number of deaths due to accidents of children under 5 years of age fell from 731 in 1953 to 687 in 1954. Of these, death was due to inhalation and ingestion of food in 250 and to accidental suffocation in 182.

Deaths Caused by Treatment.—The Registrar-General's annual statistical review contains an analysis of 149 deaths due to mishaps occurring during medical and surgical treatment in England and Wales. Death occurred in 121 cases in general hospitals, in 15 in mental hospitals, and in 13 elsewhere. Idiosyncrasy or adverse reaction to drugs accounted for 24 deaths and air embolism for 12. The former figure included four deaths due to reactions to penicillin and one due to a reaction to streptomycin. Other drugs responsible for deaths during treatment were *p*-acetylaminobenzaldehyde thiosemicarbazone, methylthouracil, Mesantoin, and chloramphenicol, all of which caused granulocytopenia. There were 14 deaths due to treatment of mental patients, 5 were due to insulin shock, 7 to electroshock therapy, and 2 to operations on the brain. There were 1,874 deaths associated with anesthesia during the period 1950 to 1952, but interpretation of the figures is difficult because it is not easy to tell if the anesthetic agent used or the illness caused the patient's death.

Myxomatosis.—The Minister of Agriculture is designating rabbit clearance areas throughout the country, whereupon it becomes the responsibility of the occupiers of such land to attempt the destruction of any rabbits present, or at least prevent their causing material damage. This policy has brought financial reward to farmers. In 1955 the grain yield in such rabbit-free areas was raised about 225 lb. per acre, representing a total of 280 million dollars in cash. The introduction of infectious myxomatosis has greatly contributed to this effort. In England the rabbit flea is the chief vector of the causative virus. As its range is short, some areas have completely escaped the infection. In other areas the few surviving rabbits are producing further generations. Although a virus-resistant strain of rabbit has not yet emerged, an attenuated virus that kills only 50% instead of the 99% of its victims has been identified. Myxomatosis by its specific host action may solve the rabbit pest problem, but such interference with nature may produce other even greater problems.

Hepatolenticular Degeneration.—Hepatolenticular degeneration, which is due to an excess of copper in the tissues, has been treated by mobilizing the copper with dimercaprol and edathamil calcium disodium. The activity of dimercaprol is due to the presence of two thiol groups (-SH), which compete with those in the tissues for the excess copper, the dimercaprol-copper complex being excreted in the urine. Since penicillamine (β,β-dimethyl-cysteine) is probably excreted in the urine after the parenteral administration of penicillin, and in the reduced (-SH) state, Walshe suggested that it might prove effective in the removal of copper from the tissues in hepatolenticular degeneration (*Lancet* **1**:25, 1956). Tests on normal subjects showed that dimethyl cysteine hydrochloride in three daily doses of 300 mg. by mouth half an hour before meals is as effective as that quantity of dimercaprol containing an equivalent amount of sulfur.

Carcinogens in the Soil.—Observations on the geographical distribution of cases of cancer have suggested that local geological factors may be incriminated. In Holland the highest death rate from cancer was found in the populations supplied by river water, and it seemed that a high-manganese content in drinking water was associated with lower cancer frequencies. Work on this aspect was carried further, and a Netherlands survey revealed that cancer of the stomach occurred more extensively in populations living on poorly drained peat soil and least on the alkaline clay soil. This pattern of distribution resembles that found in Northern Wales. Surveys that have taken into account such variables as population distributions by age and sex indicate a significant relationship between traces of metals in the soil, drinking water, and food and their possible action in the body as carcinogens.

Biopsy of the Small Intestine.—Dr. Margot Shiner in the Jan. 7 issue of *Lancet* described a technique used to obtain biopsy specimens of the mucosa of the duodenum and jejunum. The instrument used is a long flexible tube that has a small opening in the headpiece. By applying a negative pressure of at least 6.35 mm. Hg to the tube, a portion of mucosa is drawn into the opening and there cut off by a small cylindrical knife. If the patient gargles with 3 ml. of a 1% solution of tetracaine, there is little difficulty in passing the tube. Fluoroscopic x-ray control is used to assess the position of the tube. The risks of the procedure appear to be negligible. The object of the method is an attempt to relate the part played by the duodenum and jejunum in the various diseases associated with disturbed function of the small intestine such as steatorrhea, regional ileitis, duodenitis, and gastric indigestion.

Sun Blindness.—Although sun blindness is rare in the British Isles, a local epidemic occurred in Aberdeen, Scotland, on June 30, 1954, after the eclipse of the sun. The symptoms produced were difficulty in reading and in recognizing faces at a distance, a general haziness of vision, or a central blurred spot. The subjective symptoms bore no constant relation to the time spent observing the eclipse. Dr. S. Gebertt describes the treatment of this condition in the *British Medical Journal* of Jan. 14. After assessing the extent of the injury and the ophthalmoscopic changes, a retrobulbar injection of carbachol equivalent to 0.25 mg. was given, and, if improvement occurred, injections were continued for up to three days. Using this method it was demonstrated that immediate alleviation of symptoms occurred in many patients, even in those who had delayed many days before being treated.

Serotonin, Lysergic Acid Diethylamide, and Mental Disease.—It has been suggested that the changed mental status in schizophrenia and that resulting after the administration of lysergic acid diethylamide may be related to the metabolite, serotonin (5-hydroxytryptamine). Rodnight and McIlwain (*Brit. M. J.* **1**:108, 1956) have determined the urinary excretion of serotonin, which is present to the extent of 60 to 160 mcg. in a 24-hour specimen of urine from normal subjects. The administration of 100 mcg. of lysergic acid diethylamide to six subjects was associated with a consistent fall in the urinary excretion of serotonin during the next 24 hours. Thus, although a biochemical interaction between lysergic acid diethylamide and serotonin has been demonstrated in man, its specificity and possible relation to mental phenomena remain to be investigated.

Coated Tongue.—In the *British Medical Journal* of Jan. 7, Dr. I. S. L. Loudon states that he examined the tongues of 700 patients and classified them as being clean, coated, or intermediate. Records were made of the diagnosis, presence of fever, bowel habits, smoking habits, and state of the teeth. The author concluded that coating of the tongue was most common in patients with infections of the respiratory tract, any fever, and local infection of the mouth and in heavy smokers. There was no relation between coating of the tongue and any gastrointestinal disease, unless accompanied by a fever. In other words, coating of the tongue reflected a change in local conditions of the mouth due to infection, dryness, or irritants and its value as a clinical sign is limited.

Elusive Beans.—Many objects have been retrieved from the orifices of the body, but it must be unique to discover a broad bean 1.5 cm. in length in the peritoneal cavity. This was found at laparotomy for ectopic pregnancy in a Lagosian woman in the Gold Coast. Apparently it is not uncommon among Africans there to insert vegetable materials into the vagina to cure various ailments. This patient had inserted a bean through the uterine cervix each month for several months. The fact that one wandered into the peritoneal cavity is of interest, as presumably the others escaped again through the vagina.

New Weight Reducer.—A new weight-reducing drug, 2-phenyl-3-methyl-tetrahydro-1:4-oxazine hydrochloride, has been introduced. It is not related to the amphetamine group of weight-reducing drugs, and it is claimed that it may be given safely even to those with cardiovascular disorders and hypertension. It is further claimed that it controls appetite without affecting the blood pressure and that it acts without any excessive mental stimulation.

CORRESPONDENCE

SALK POLIOMYELITIS VACCINE— 1956 EMERGENCY DOSAGE SCHEDULE

To the Editor:—The art of medicine often consists in making reasonable compromises between ideal and real situations. The real situation with regard to the present supply of Salk poliomyelitis vaccine, as it concerns the private practice of many physicians, may require a compromise with the ideal dosage schedule for the administration of this proved prophylactic for paralytic poliomyelitis. I wish to present and reiterate some facts about the Salk vaccine that may help physicians decide most wisely for themselves how they shall use the supplies of vaccine that are available to them. The following compromise or emergency dosage schedule of Salk vaccine coming into the physician's private practice seems warranted under current conditions of supply: 1. Do not give "booster" shots between now and July 1. There is minimal risk if, in fact, any at all, in giving primary or booster shots during the poliomyelitis season. 2. Use all available vaccine immediately. Do not save it for "second shots," even though a sterilely punctured vial of vaccine can be kept under refrigeration without impairing either safety or potency of the vaccine. 3. The increasing supply of vaccine should be depended on for second injections in 1956. The exact interval recommended between the first and second doses is not critical, so long as it is not less than two weeks. In fact, longer intervals seem to be advantageous. Therefore, the second dose may be given at any time without losing the benefit of the first. 4. The third dose should be given not less than seven months after the second but may be given at any time thereafter.

On March 13, 1956, the Surgeon General of the Public Health Service issued a statement endorsing the postponement of "booster shots" as a temporary measure "to enable more children to receive first or second doses and thus extend protection to more people before this summer's poliomyelitis season." On the basis of reports from manufacturers and the Surgeon General concerning estimated vaccine production, it is believed that an adequate supply should be available for distribution before the seasonal advent of poliomyelitis. How much of this will get in the hands of private physicians will depend on decisions of state and local health authorities and their advisory committees. If the anticipated supply becomes available, it should be about enough to provide a high degree of protection against paralytic poliomyelitis before the 1956 season to all children in the most susceptible age groups (6 months through 14 years) and pregnant women who request it. In round numbers, there are about 50 million persons in these categories. At least 10 and probably 15 million children have already received one or more injections of Salk vaccine. This leaves about 35 million children to be vaccinated on an emergency basis before the 1956 poliomyelitis season. Granting rapid and equitable distribution and no unanticipated delays in processing and releasing vaccine (which require a minimum of 120 days), we should have just about enough vaccine to give at least one and usually two injections each to 35 million people. Administration of this vast amount of vaccine presents a task of heroic proportions. The ideal dosage schedule currently recommended is two 1-cc. injections, spaced two to six weeks apart, with a third 1-cc. ("booster") injection given not earlier than seven months later. Ideally, the first two injections should be given immediately after the poliomyelitis season (in the late fall) with the booster injection being administered just before the subsequent season. This schedule is, however, impossible to follow under the emergency conditions of 1956. In the future, vaccination against paralytic poliomyelitis undoubtedly will become a standard pediatric procedure, with a schedule of injections beginning at 6 to 9 months of age, but we must face the current situation realistically. The effectiveness of the vaccine depends on the mass of antigen administered and the number and spacing of inoculations. A compilation of reports from 30 state health officers, evaluating results of the 1955 vaccine program, showed about 79% effectiveness, even though three inoculations, as recommended, had not been given. This compilation compares experience among 5,200,000 unvaccinated children and 4,800,000 children who received one or more doses, but mostly only one dose, of vaccine. Even under the epidemic conditions that prevailed in Massachusetts in 1955, a high rate of protection (60%) against paralytic poliomyelitis was reported from just one dose of the vaccine used in that state. Other research, still in progress, has revealed that the first injection of vaccine of the potency that prevailed in 1955 did not "take" in about 20% of the children inoculated, but a substantial percentage of those who fail to acquire antibody on the first injection attain antibody, and a primary sensitization, with a subsequent injection. For a true booster effect, in which antibody reaches high levels, equal to or exceeding those produced by naturally acquired immunity, the booster injection following primary sensitization must be delayed at least seven months. An increasing vaccine supply may be anticipated as the poliomyelitis season approaches. There will also be a greater public interest in getting vaccination at this time; but because of the time required to induce full immunity, it would be advantageous to give the first dose as early as possible to all within the stated age groups.

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REACTION TO PREDNISONE MASQUERADING AS CEREBRAL VASCULAR ACCIDENT

To the Editor:—Numerous reports of convulsive seizures complicating prolonged therapy with cortisone or corticotropin have been published. Almost all of these reports have been of mild epileptiform seizures. The mechanism of these disturbances is not known, but the development of cerebral edema is one explanation that has been offered. None of the reports has described an attack so severe as to mimic a massive, terminal, cerebral hemorrhage. Such a case was, however, seen by us. On Dec. 30, 1954, a 64-year-old woman was admitted to the hospital in coma following a seizure of Jacksonian epilepsy. She had no previous history of hypertension, epilepsy, or other neurological disease but had been taking corticotropin and cortisone sporadically since 1951 for rheumatoid arthritis. In the year preceding admission she had received 25 to 50 mg. of cortisone daily. On admission she was semistuporous, answered questions vaguely, and lapsed into sleep if not continuously stimulated. There were signs of moderate peripheral and pulmonary edema; bilateral Hoffmann and Babinski signs were elicited, and there was evidence of arthritis in her hands, wrists, elbows, and knees. Cortisone therapy was discontinued, and with dehydration and general supportive therapy she became asymptomatic and the neurological abnormalities disappeared within one week. She was discharged in January, 1955, with a diagnosis of rheumatoid arthritis and therapeutic misadventure due to cortisone therapy manifested by a Jacksonian-type seizure, encephalitis-like syndrome, and anasarca. Although the patient and her family were advised to treat her arthritis with salicylates and physiotherapy alone, in March a course of therapy with prednisone was begun at another installation, starting with 5 mg. four times daily, with gradual reduction to a maintenance dose of 2.5 mg. twice daily by September. She was seen by her physician once weekly during this course. On Nov. 6 she had a sudden generalized convulsion followed by clonic convulsions at about 10-minute intervals until her readmission to the hospital one hour later. At this time examination showed generalized spasticity, more pronounced on the left so that her head, eyes, and face were drawn to the left. Her extremities were spastic, more so on the left, and cogwheel rigidity was present in the left upper extremity. Her neck was stiff but not rigid. The Babinski sign was elicited bilaterally, but Hoffmann's sign was not present. Coarse rhonchi were heard

throughout her lung fields, and pitting edema was present in both lower extremities. Clonic convulsions lasting 20 to 30 seconds occurred at two-minute or three-minute intervals and involved her left side more than the right. Her rectal temperature was 102 F (38.9 C); her pulse rate varied from 88 to 140 beats per minute; her respirations were labored, and her respiratory rate was 30 per minute. Arthritis was present in the peripheral joints. A tentative diagnosis of a severe cerebral hemorrhage involving the internal capsule and basal ganglions was made. The patient was placed in an oxygen tent, and vigorous therapy with magnesium sulfate, phenobarbital, and lanatoside-C was begun. The convulsions became less frequent and less severe and ceased nine hours after admission. In addition to supportive care, prednisone therapy was withdrawn and small doses of corticotropin were given to restore normal adrenal cortical activity. Digitalization was accomplished, and dehydration was completed by salt and fluid restriction and by treatment with mercurial diuretics. There was a progressive loss of stupor and of spasticity, so that her sensorium was completely clear by the third day and only a slight weakness in her left arm and hand persisted on the fourth day. This disappeared completely within a few days, leaving no residuals. An electroencephalogram on the seventh day after admission showed diffuse mild dysrhythmia, with no definite focus or epileptic pattern. The patient was discharged with emphatic instructions to avoid steroid hormone therapy.

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FAITH

To the Editor:—The speech of Dr. Norman Vincent Peale at the inaugural ceremonies of the American Medical Association, June, 1955, marks another milestone in the progress of psychosomatic medicine. It illustrates how far physicians have come from the materialistic attitude of the 19th century to the present time. No longer is man considered merely a chemical, anatomic, or physiological machine; he is a human being with thoughts and feelings that profoundly influence his body. One of the most important influences that modifies man's behavior is religion, which has to do with faith and love. It has been found that faith in the physician is a powerful force in healing, but even more powerful is faith in God—the source of life and health. Physicians are now able to count on this religious faith of patients and to understand and use it. Many surgeons refuse to operate on patients who say they are going to die, because they know the will to live is gone. There is no one they care for and no one who cares for them, and life becomes so barren that they die. We also know that there are seemingly miraculous cures due to deep religious faith. Such recoveries are seen in places like Lourdes in France—but they also occur in practically every hospital in the country. The healing power of faith is incalculable. It is wonderful that physicians are now recognizing the power of this faith and using it in their work.

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CONTACT DERMATITIS FROM NEOMYCIN

To the Editor:—Cases of contact dermatitis from neomycin therapy are considered rare; however, within less than one year I have encountered nine cases of a peculiar dermatitis due to contact with ointments containing neomycin. As the cause of the dermatitis in most of these cases was suspected by neither the patients nor their physicians, it seems appropriate to bring this form of contact sensitivity to neomycin to general attention. The following seems characteristic of this type of contact dermatitis: 1. The clinical appearance, in most instances, was that of an insidious aggravation of a preexisting dermatitis and not the obvious picture of an acute, superimposed contact dermatitis. 2. Application of ointments containing neomycin usually, but not always, would aggravate the dermatitis. 3. Preparations containing both neomycin and hydrocortisone at times appeared helpful. 4. Patch tests with neomycin were either completely negative or only occasionally or inconstantly positive. 5. Intradermal tests with neomycin solutions 1:1,000 and 1:100 produced papular tuberculin-type reactions. 6. Elimination of ointments containing neomycin was followed by gradual improvement or recovery.

As this form of contact dermatitis is based not on epidermal but on dermal-delayed (tuberculin-type) sensitivity (Epstein, S.: *A. M. A. Arch. Dermat.* **73:**236-255 [March] 1956), and, therefore, patch tests are mostly negative, these cases apparently have escaped recognition. Neomycin is used widely as a topically applied antibiotic; a random check of drug catalogues reveals over 25 topical preparations containing neomycin. I have observed only contact sensitivity of the skin, especially in cases of eczema of the ears; but those who are using eyedrops or nose-sprays containing neomycin should look for delayed sensitivity of the mucosa of the nose and the conjunctiva. I have not observed cases of dermal contact dermatitis from other antibiotics, probably because neomycin has been my topically applied antibiotic of choice. An observation by Robinson (*Internat. Record Med. & Gen. Pract. Clin.* **168:**207-212 [April] 1955) indicates that other antibiotics such as Terramycin may also cause contact dermatitis with negative patch tests. The purpose of this letter is to draw attention to this type of contact dermatitis but not to condemn the use of a drug as valuable as neomycin. Besides being a potent antibiotic it has the additional advantage that for all practical purposes it is used only externally. Physicians must become aware of neomycin sensitivity, especially in the treatment of eczemas. Once suspicion has been aroused, one should not be misled by negative patch tests. A delayed reaction to an intradermal test with 0.05 cc. of a 1:1,000 solution of neomycin proves contact sensitivity to neomycin.

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LARYNGEAL EDEMA AND DRUGS

To the Editor:—May I sound a note of warning in the use of chlorpromazine. A moderate degree of laryngeal edema developed in a 51-year-old man with a history of chronic alcoholism and barbiturate addiction after ingesting a 25-mg. dose of this drug. This was taken four hours after an intramuscular injection of the same drug. This patient was advised against taking any more of this medicament. Four previous doses had been given intramuscularly with no adverse effects. The patient had had a severe reaction to penicillin several years earlier. About three weeks after the above episode the patient was given a 25-mg. dose of chlorpromazine orally by someone other than a physician, and 20 minutes later a severe laryngeal edema, which required immediate hospitalization, developed. His condition was critical for a few hours. It is my impression that the above patient had a definite allergic reaction to this drug.

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CORTISONE INJECTIONS

To the Editor:—In the Correspondence section of the March 10, 1956, issue of The Journal, page 899, is a letter relative to the article "Intra-Articular and Paravertebral Injection of Cortisone in Osteoarthritis of Spine," regarding the possibility of untoward reactions, particularly as to entrance of the needle into the vertebral artery or transfixing the ligamenta flava, thus entering the subarachnoid space. We have used this procedure in two large arthritis clinics in Philadelphia for over two years. Thousands of injections have been administered (sometimes as often as twice weekly) without mishap. Although untoward reactions are possible, in our experience none has occurred.

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BUSINESS PRACTICE

The American Medical Association and the Sears-Roebuck Foundation cooperatively have prepared a brochure entitled "A Planning Guide for Establishing Medical Practice Units." This publication contains practical suggestions on various phases of planning from selection of a site to arrangement of equipment and is available in the libraries of state and county medical society offices. From time to time parts of the brochure, slightly modified editorially, will be reproduced in the Business Practice section of THE JOURNAL.—ED.

EXAMPLES OF ROOM ARRANGEMENTS

COMBINATION OF EIGHT BASIC ELEMENTS

Eight Basic Elements in a New Building

To make a practical application of the use of the elements discussed previously an example is given of three doctors who wish to combine their efforts and resources in a common medical practice facility, whether it be by building a new structure, remodeling an existing one, or improving leased space. The three doctors feel that their practices will complement each others, and will not conflict in office use. They have decided to locate in a rapidly growing suburb of one of the major cities in the central midwest.

The first example is that of building a new structure on a bare lot. This lot is in the middle of a block close to a projected shopping center. The street is a major traffic artery for local traffic only, with a high count of pedestrian and vehicular traffic expected. They were able to obtain the property consisting of three 60 ft. lots 150 ft. deep at a reasonable price because of their promptness in anticipating the desirability of the location while plans for the shopping center were not yet announced. Their first thought was that one of the lots would be sufficient for their office, but upon consideration they decided that, if the area grew as fast and as much as might be expected, the extra space would be well worthwhile if used as a parking lot. In any event the money put in the extra lots now could be considered as a good investment.

They thought they could use two of the lots as building lots and that the third would give them dual access to the parking area in the rear and could be used as additional parking. As the lot was on the north side of an east-west street they ran the building parallel to the street. They wanted to leave space for an addition to house at least one more man, and to distinguish their building from the usual commercial structure space was also allowed for planting to be done when money was more plentiful (fig. 4).

Eight Basic Elements in a Remodeled Building

Three other doctors chose a similar location that was a bit older in another suburb of a northern city. It, too, was growing. On the site, suitable in respect to location, traffic, and accessibility, was an old garage building. The structure was sound, too good to tear down, but there was no ceiling under the trusses, which were 10 ft. in the clear. It had no charm and was badly placed in the corner of the three lots next to another building. After consultation with an architect, who showed them how to convert and remodel the building satisfactorily, they purchased it and the two empty lots to the west. This gave them space for a parking area and was laid out in such a way that they could make an addition to the building. The area reserved for this addition was put into lawn and shrubbery for the present.

Eight Basic Elements in Leased Premises

Still another three doctors faced with the same problem found a location in an older town that had a nearly defunct business district. Their finances were meager. They could not afford to build and could find nothing to buy that they could afford to remodel. However, space was available on the second floor of one of the ancient buildings on the old main street. The first floor was rented already to two established businesses that would not consider leaving. The two lots to the west had been occupied by another old building that had burned out some years before, and the rubble in the basement was not cleaned up. The lots were cheap and as a hedge against the future were snapped up due to the foresight of one of the doctors. The space for rent on the second floor was larger than needed but was relatively clear of partitions.

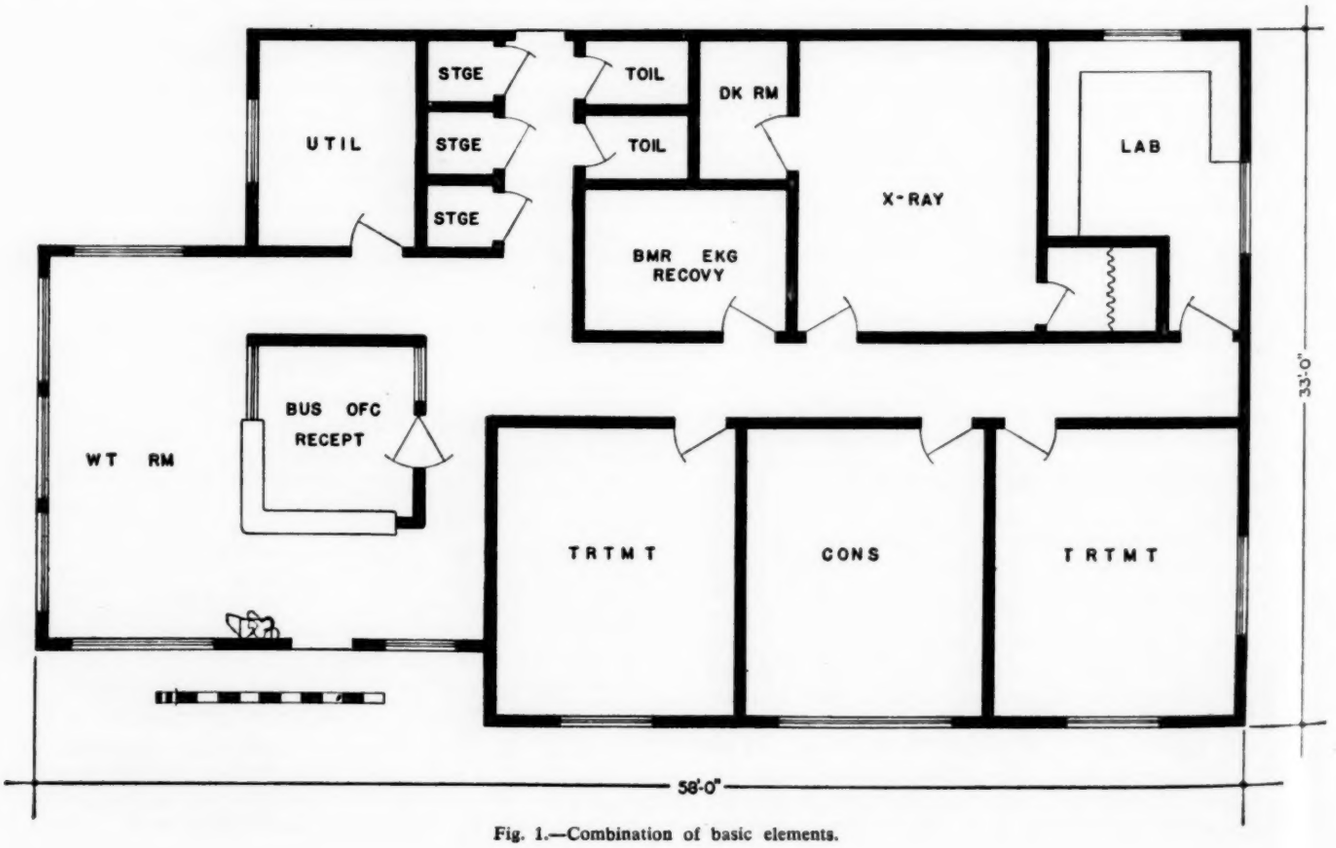

Fig. 1.—Combination of basic elements.

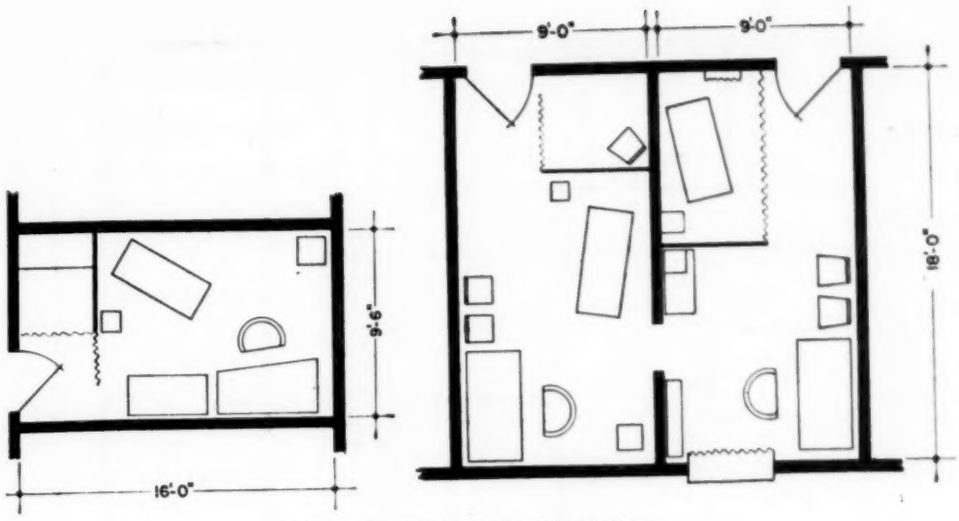

Fig. 2.—Consultation and treatment rooms.

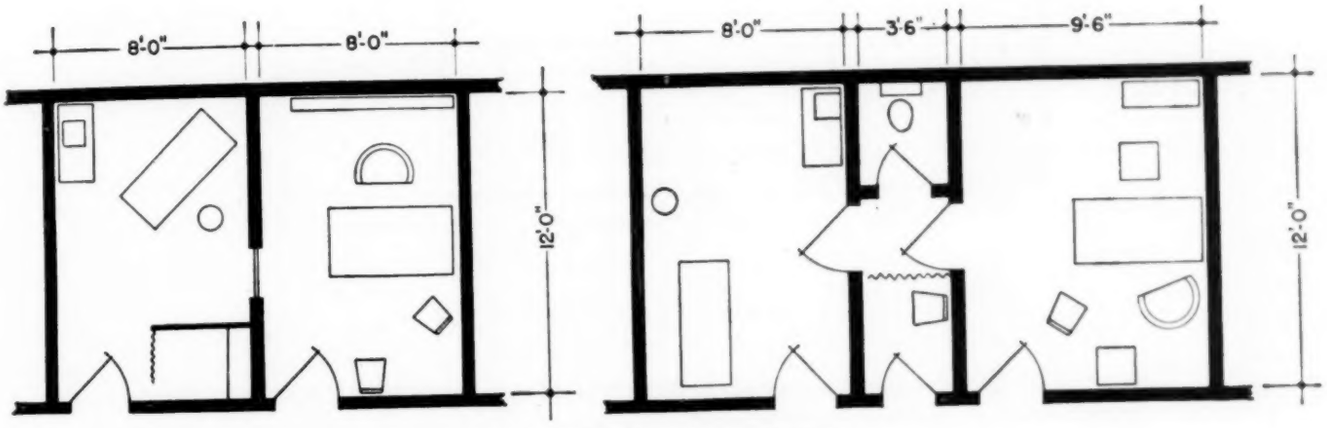

Fig. 3.—Consultation and treatment rooms.

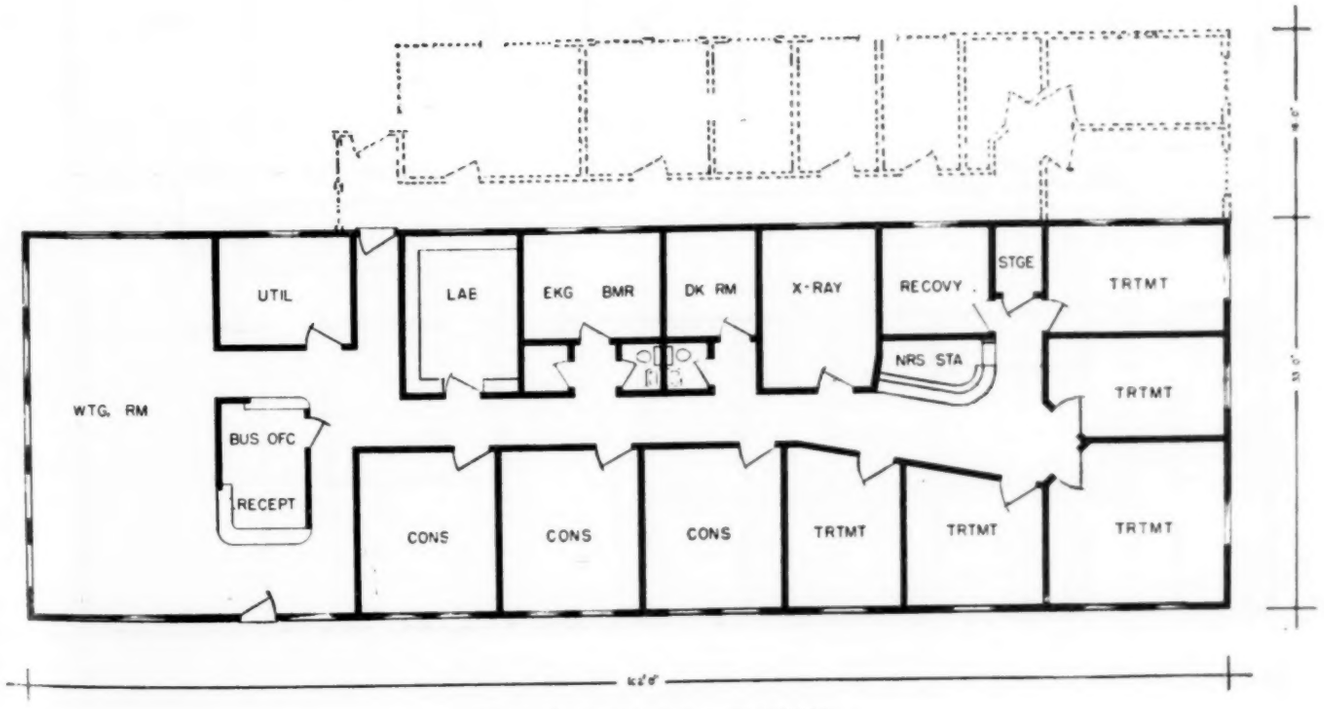

Fig. 4.—Basic elements in a new building.

Fig. 5.—Basic elements in a remodeled building.

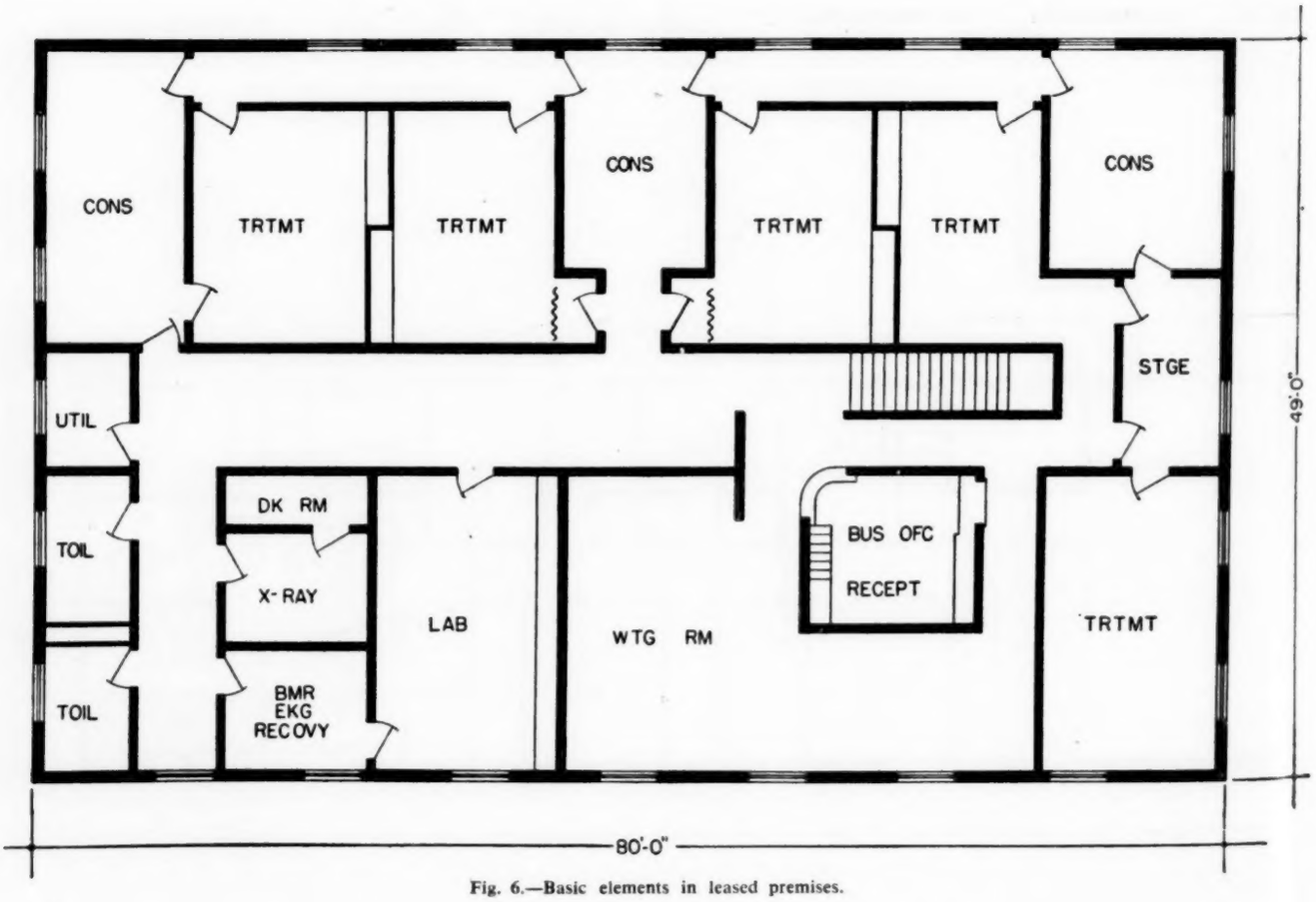

Fig. 6.—Basic elements in leased premises.

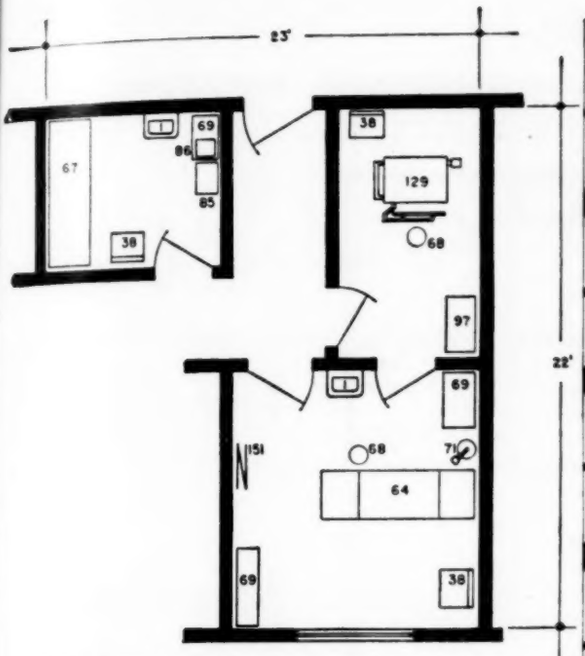

Fig. 7.—Examining and treatment room for general practitioner. (Numbers refer to equipment list in original booklet.)

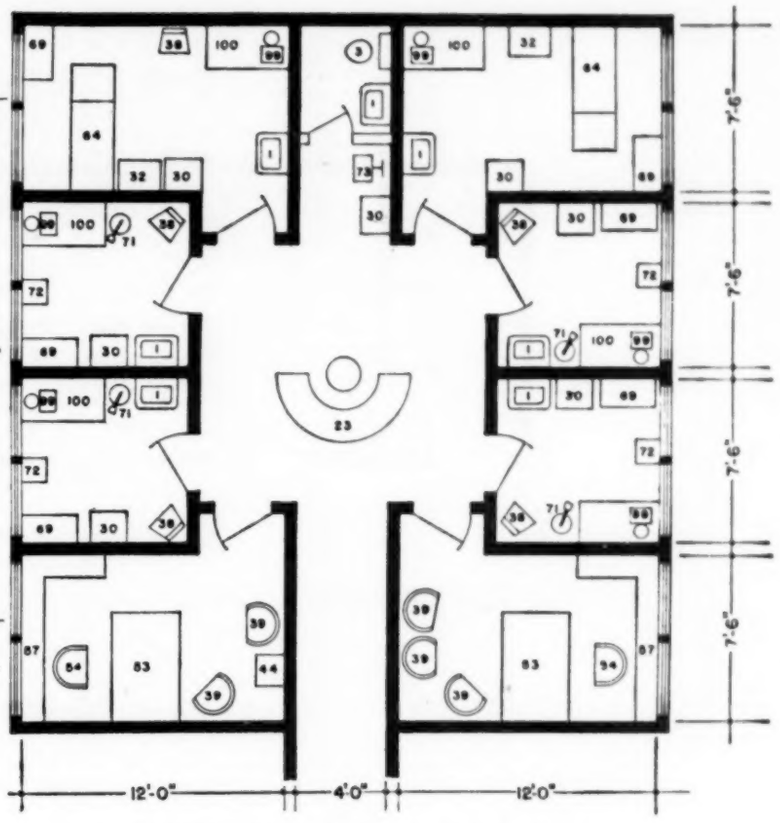

Fig. 8.—Examining and treatment room for pediatrician.

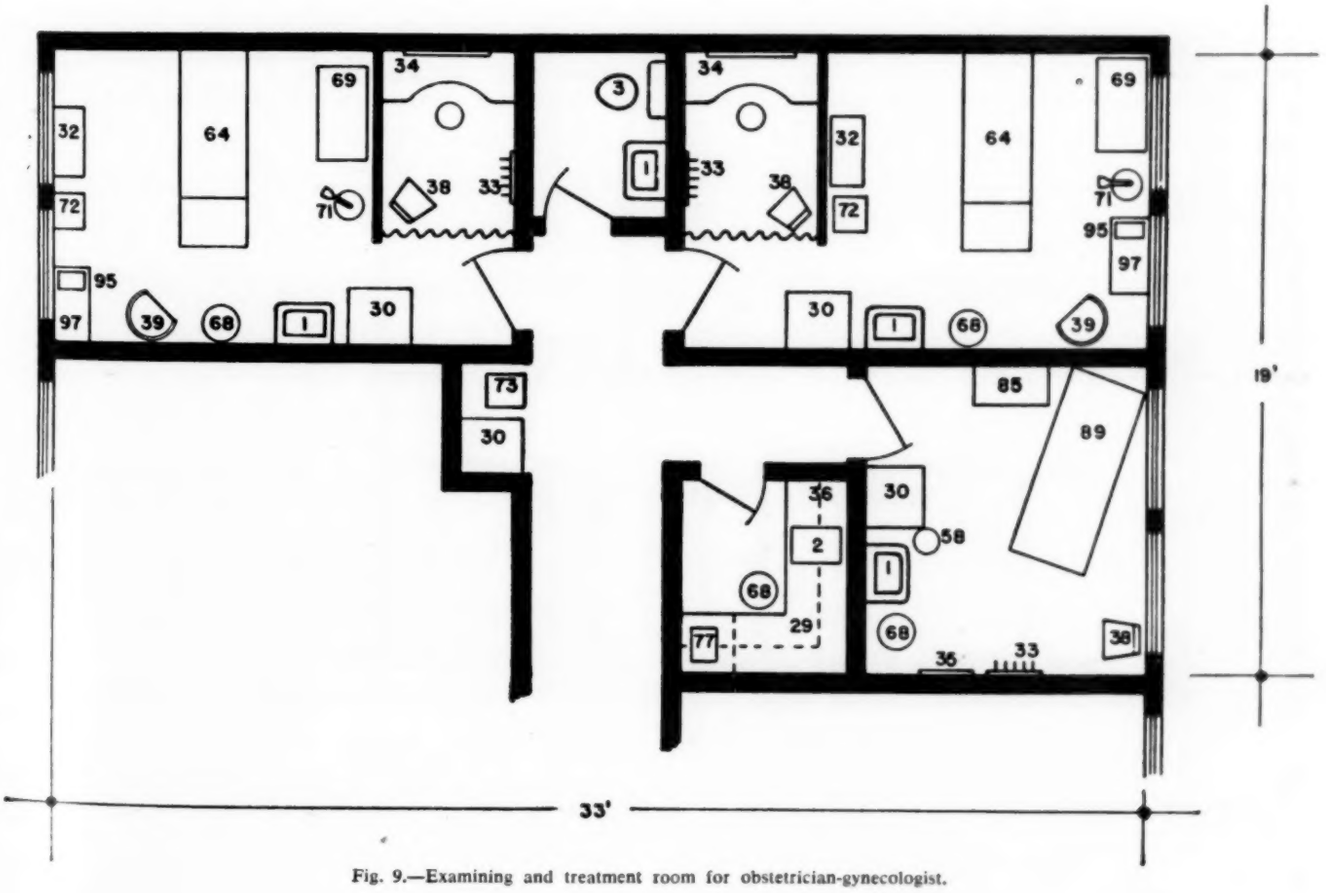

Fig. 9.—Examining and treatment room for obstetrician-gynecologist.

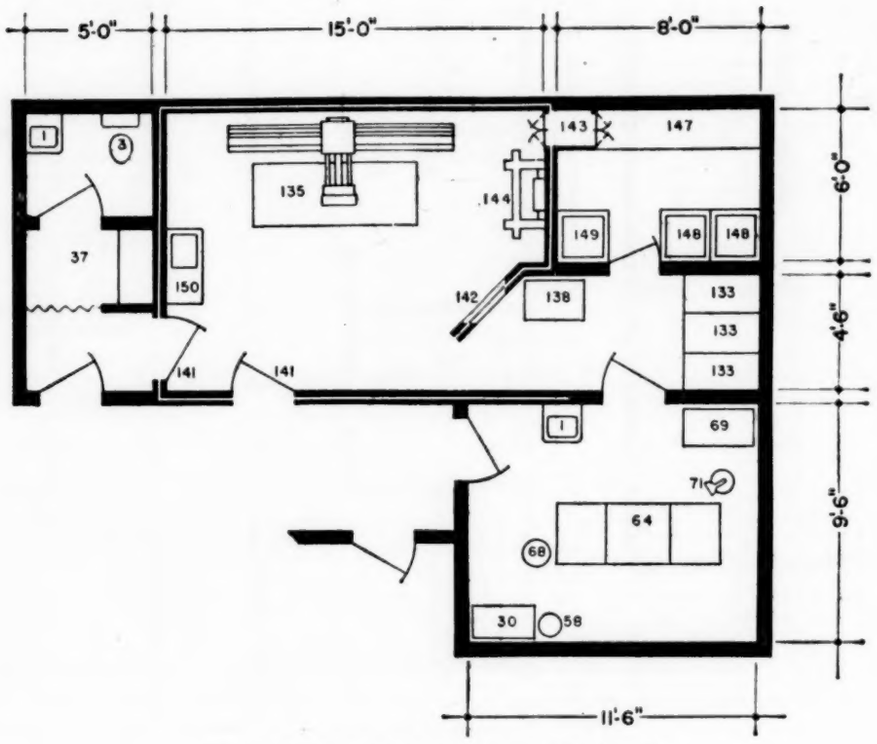

Fig. 10.—Examining and treatment room for internist.

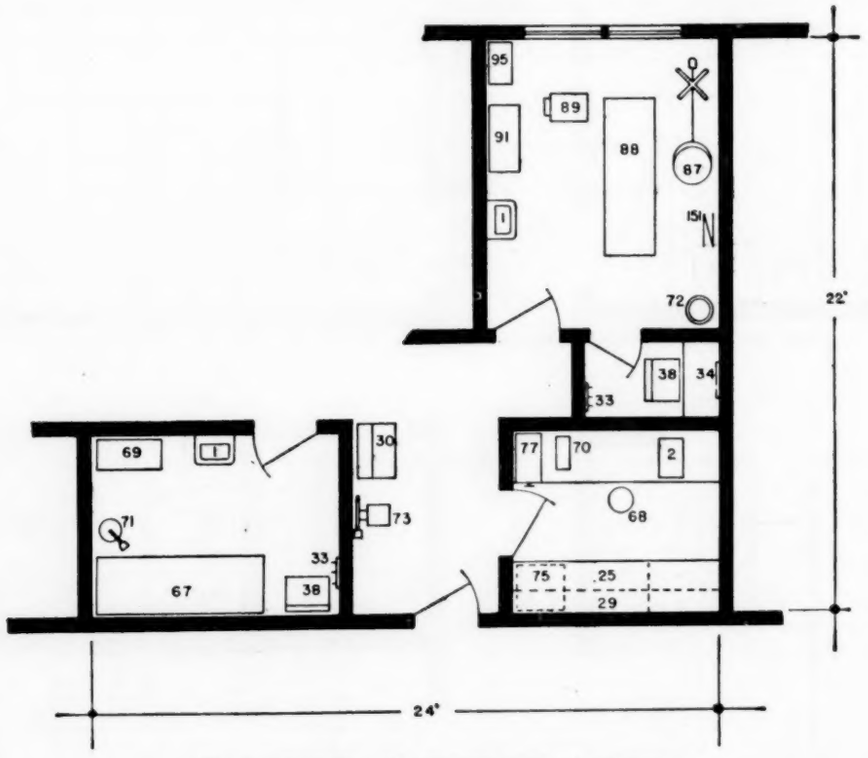

Fig. 11.—Examining and treatment room for surgeon.

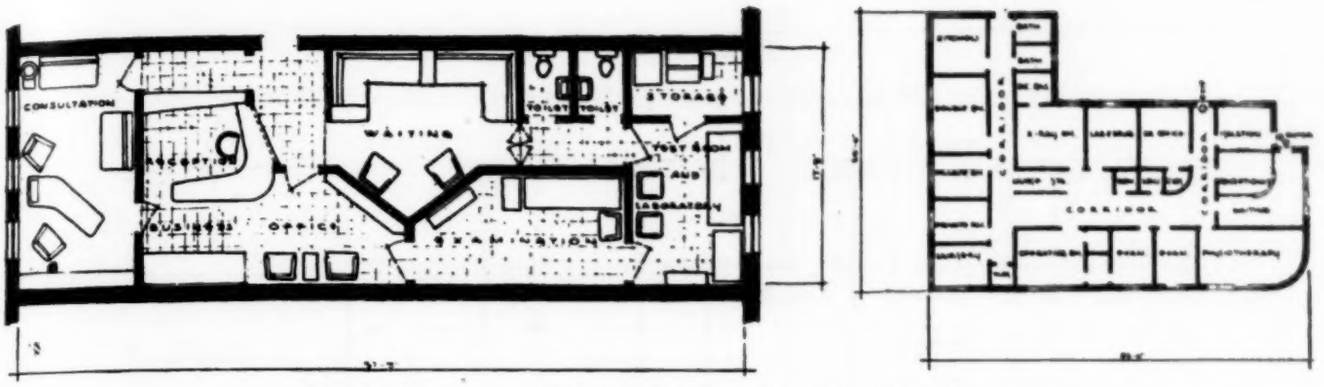

Fig. 12.—One-physician medical practice facility and four-bed patient facility.

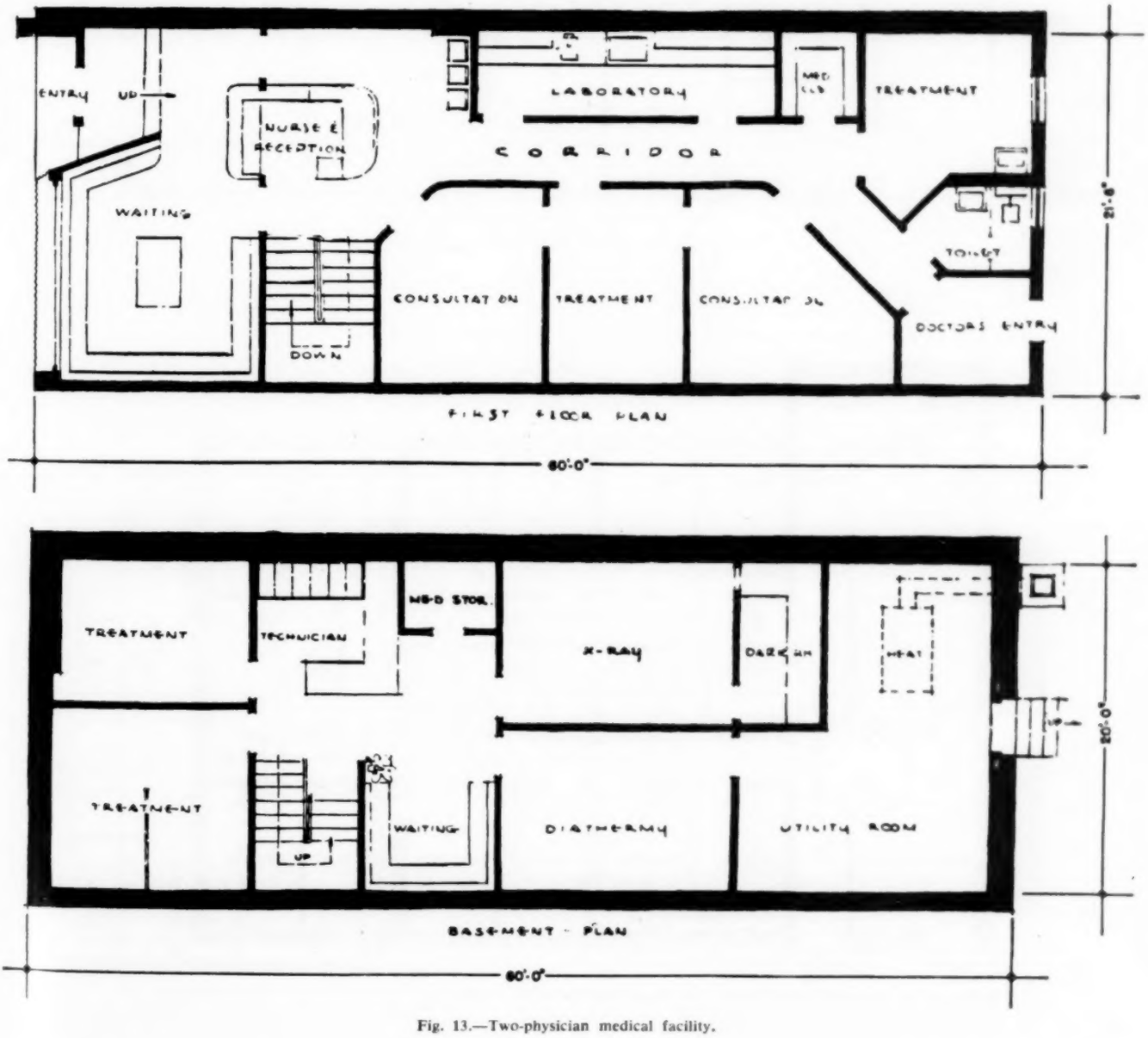

Fig. 13.—Two-physician medical facility.

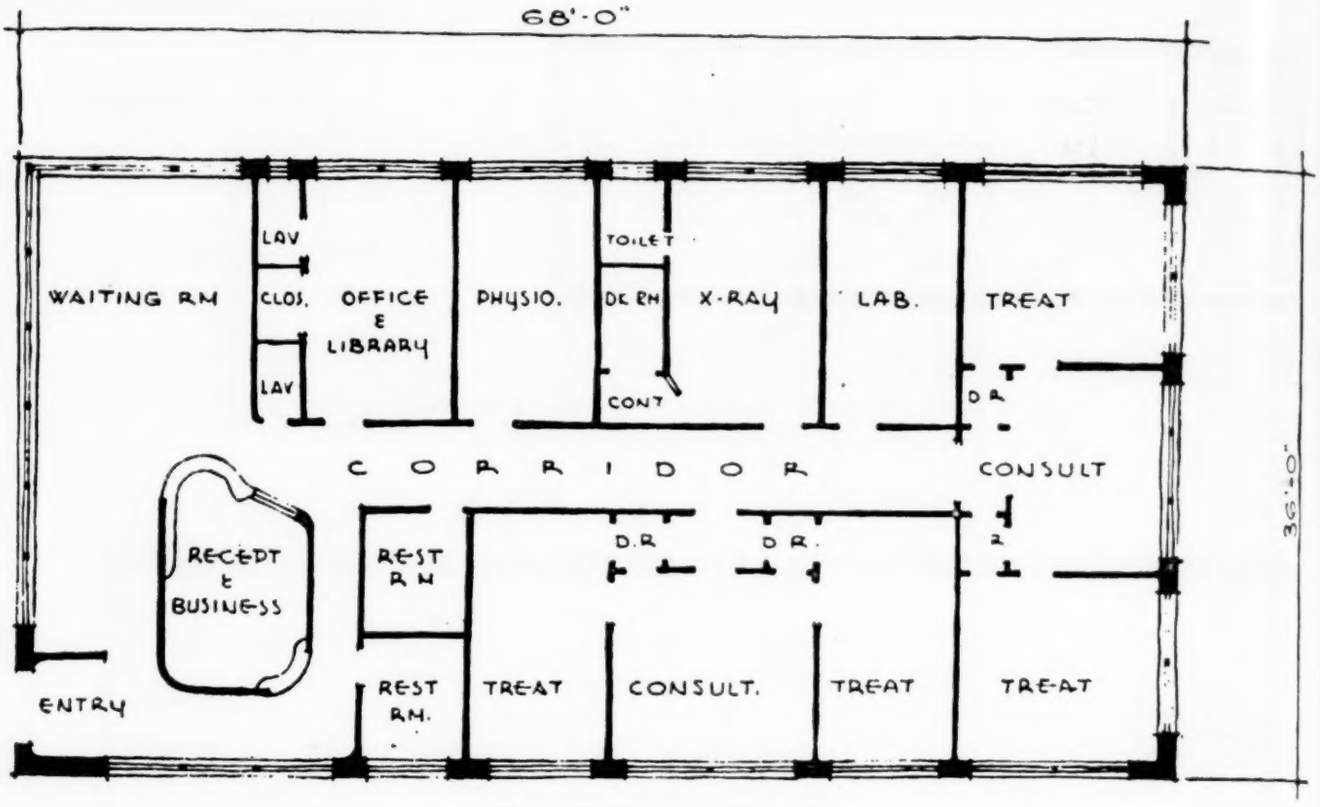

Fig. 14.—Two-physician medical facility.

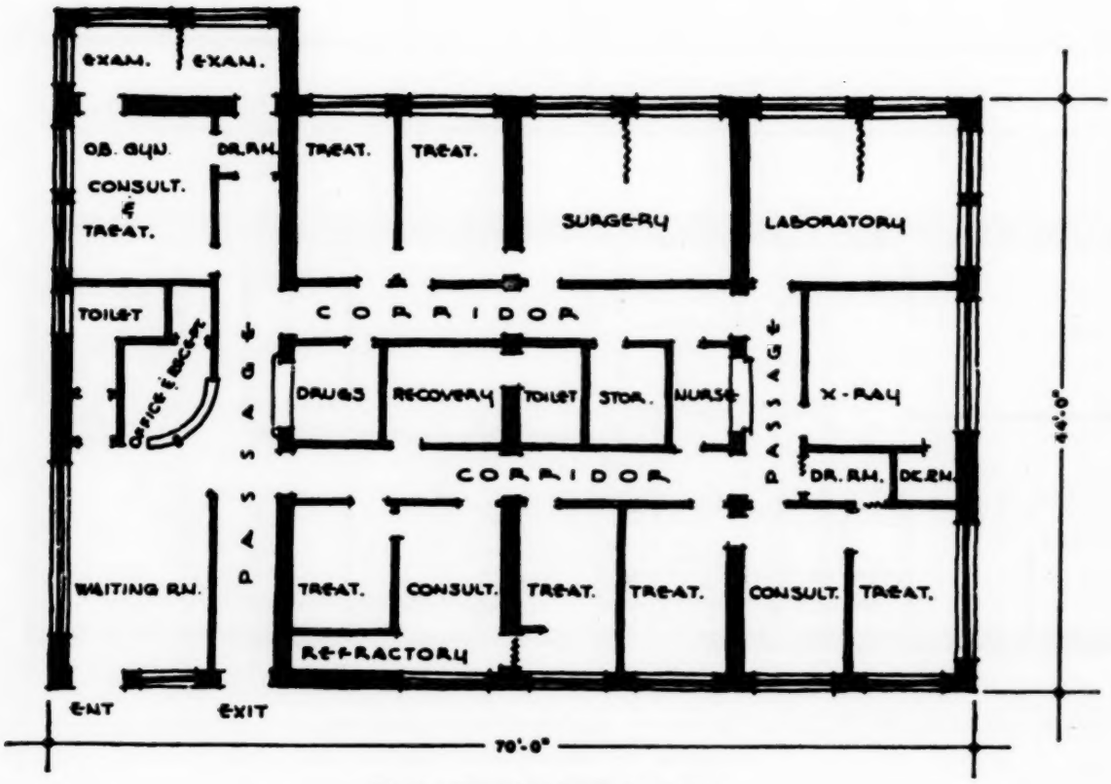

Fig. 15.—Three-physician medical facility.

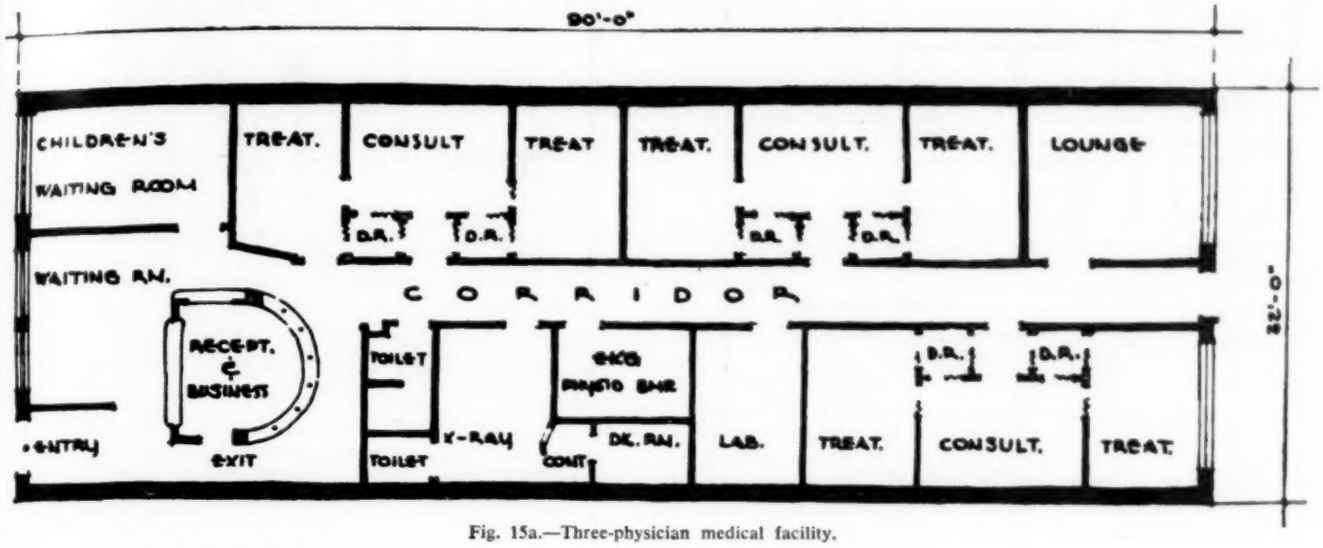

Fig. 15a.—Three-physician medical facility.

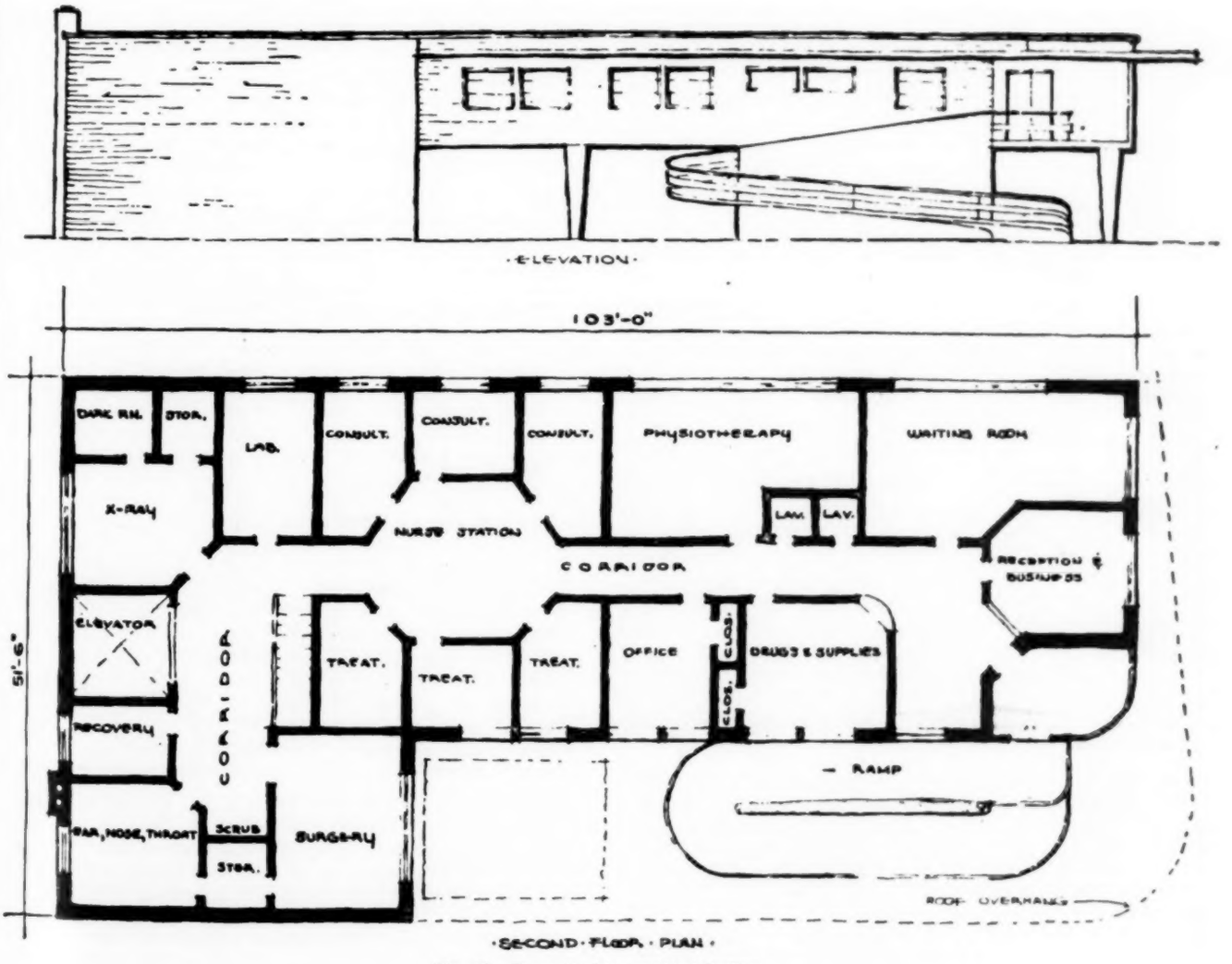

Fig. 16.—Three-physician medical facility.

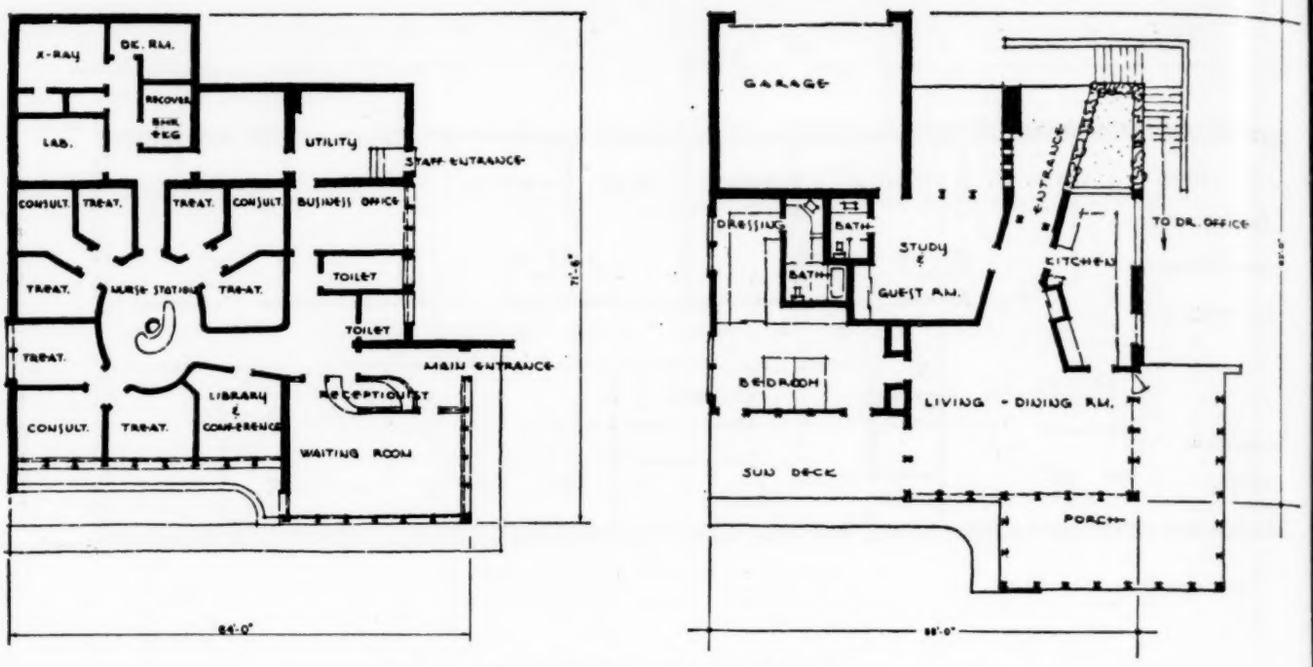

Fig. 17.—Four-physician medical facility.

MEDICAL FILM REVIEWS

Myasthenia Gravis: Diagnosis, Treatment and Management: 16 mm., color, sound, showing time 27 minutes. Sponsored by the Myasthenia Gravis Foundation and Hoffman-LaRoche, Inc. Technical Advisor: Kermit E. Osserman, M.D., New York. Produced in 1955 by Sturgis Grant Productions, New York, and procurable on loan from the Myasthenia Gravis Foundation, 2 E. 103rd St., New York 29.

In this film, the incidence of myasthenia gravis and the history behind the present successful diagnosis and treatment are discussed. The known pathophysiology is explained in detail by animation, and the various tests used in diagnosis are shown. The clinical course of the disease is described. In the section on treatment, Prostigmin, Mestinon, and Mysuran are discussed, and the great variation in dosage from patient to patient is emphasized. The management of both cholinergic and myasthenic crises is demonstrated. At the end of the film is a statement regarding the research in progress and the greatly improved outlook for the patient. This is an excellent presentation of myasthenia gravis, and the controversial features, such as management of thymoma, have been presented as being controversial. This film is recommended for showing to general practitioners, medical students, and nurses.

The Linear Accelerator: 16 mm., black and white, sound, showing time 12 minutes. Presented by Mullard Limited in conjunction with the Educational Foundation for Visual Aids. Produced by Halas and Batchelor Cartoon Films. Procurable on loan ($2.50) from British Information Services, 30 Rockefeller Plaza, New York 20.

This film shows the operation of a linear accelerator built at Harwell, England, and elaborated to the point where it can be used for the treatment of patients by means of very hard roentgen rays. The theory is made clear by means of animated diagrams, and the actual laboratory setup is photographed in operation. In the concluding sequences, a patient is shown receiving treatment, and the adjustment and operation of the apparatus is well demonstrated. The only criticism of the film would be of its retention of the miles per second in place of the much simpler metric equivalent for the velocity of light. The film is highly recommended for showing at all levels, from high school physics classes to graduate classes in radiology, inasmuch as the presentation is remarkably clear as to fundamental points and at the same time involves the most recent developments of atomic energy. It should be especially useful in medical schools giving a course of lectures in radiology. The narration is good, and the quality of the photographs and diagrams leaves nothing to be desired.

Someone Who Cares: 16 mm., black and white, sound, showing time 22 minutes. Produced in 1955 by Indiana University Audio Visual Center in collaboration with an educational committee from the Indiana Association for Mental Health and the Indiana State Division of Mental Health. Procurable on rental ($4.75) or purchase ($90.00) from Indiana University Audio Visual Center, Bloomington, Ind.

This film points out the extent of mental illness in our country today and explains how people from all walks of life can become victims of some kind of mental or emotional disorder. It shows some of the undesirable conditions existing in mental hospitals, emphasizing the monotonous, lonely days of the patient, and contrasts the activity and liveliness in wards where a volunteer program is in operation. The volunteer program is interpreted in terms of the benefits derived by both the patient and the volunteers, and the manner in which prospective volunteers are oriented to the program is shown. This is an excellent film for encouraging lay people to serve as mental hospital volunteers. For persons who might want to become volunteers but are afraid, it shows that most patients they would deal with are not in any sense violent. It is recommended for showing to adult groups and service organizations interested in the problem of mental health.

Baby Goes Home: 16 mm., black and white, sound, showing time 18 minutes. Produced in 1955 by Jam Handy Organization, Detroit, for and procurable on loan from Mead Johnson and Company, Evansville 21, Ind.

This motion picture shows mothers that the care of a "first" baby is nothing to fear. Before leaving the hospital, they see a young mother learn from her doctor and nurse that the care of the child can be fun instead of a cause for concern. They learn how to bathe the youngster and how to prepare the formula so that the baby's food is clean. The importance of cuddling and imparting that important feeling of being loved is stressed. The demonstrations of feeding and bathing procedures are very good. The only objection to the film is that no mention was made of breast feeding. This film will be of great interest to mothers and could be shown in the hospital before they go home or to classes of prospective parents.

MEDICAL LITERATURE ABSTRACTS

INTERNAL MEDICINE

Continuous Intragastric Milk Drip in Treatment of Uncomplicated Gastric Ulcer. R. Doll, A. V. Price, F. Pygott and P. H. Sanderson. Lancet **1**:70-73 (Jan. 14) 1956 [London, England].

Doll and associates assessed the therapeutic value of continuous intragastric milk drip in the treatment of gastric ulcers by means of a controlled trial with 164 inpatients in two hospitals. Eighty-two received the drip treatment, and 82, who were otherwise treated in the same way, did not. In 40 patients the drip consisted of six pints of milk a day without any added alkali, and in 40 others, 40 gm. of sodium bicarbonate was added to each six pints of milk; in 2 the dose was increased to 80 and 140 gm. The proportion of ulcers that healed in the course of a month was identical in the two major treatment groups. The average amounts healed, expressed as a percentage of the initial size of the ulcer, were also similar. The impression was that pain was relieved more rapidly with milk drip than without it, and an alkalinized milk drip is considered a useful adjunct to the standard treatment in patients whose pain persists after rest in bed. Patients given milk drip gained, on the average, more weight than patients not given the drip (7 lb. compared with 3 lb. 8 oz.), and a slight advantage (15 oz.) was still preserved two to three months after discharge. The failure to demonstrate a beneficial effect on the healing of gastric ulcers with continuous intragastric milk drip is disappointing. The present data throw no light on the value of milk drip in the treatment of duodenal ulcer. Acid secretion is usually above normal in patients with a duodenal ulcer, while it is usually close to normal in patients with gastric ulcer. It is, therefore, possible that peptic digestion may play a more important role in the production or maintenance of the activity of duodenal ulcers, and conclusions drawn from the treatment of patients with a gastric ulcer cannot be applied automatically in the treatment of patients with a duodenal ulcer.

Severe Acute Toxic Porphyria Treated by Hibernation. C.-A. Muller. Presse méd. **63**:1711-1712 (Dec. 10) 1955 (In French) [Paris, France].

A 21-year-old woman suffered a severe attack of acute toxic (intermittent) porphyria with excruciating abdominal pain unrelieved by anything but subcutaneous injections of epinephrine. Vomiting was uncontrollable. In the face of hyperthermia, hypotension, and greatly accelerated pulse and respiration rates, it was decided to induce artificial hibernation. The lytic cocktail was administered, and the patient was refrigerated by means of icebags. Refrigeration was interrupted after 36 hours because the patient began to cough, there was dulness to percussion, and a lobar opacity was demonstrated radiologically. The author believes these were the symptoms of atelectasis, not of a lobar pneumonia. The intravenous infusion of neuroplegics was continued as necessary. When this stopped, owing to phlebothrombosis, it was the morning of the seventh day of hibernation. The patient's state was good, and treatment was not resumed. She had no memory of the period of treatment. That evening she could take liquid nourishment without vomiting or even nausea. Three months later she was well. The mortality rate within the first week from attacks of acute toxic porphyria of this magnitude varies between 60 and 90% according to Markowitz (1954).

The Antibody Deficiency Syndrome: Agammaglobulinemia. S. Barandun, H. Büchler and A. Hässig. Schweiz. med. Wchnschr. **86**:33-38 (Jan. 14) 1956 (In German) [Basel, Switzerland].

The authors report observations on a 32-year-old man who has been under their observation for the past 10 years. He contracted pneumonia and pleurisy in the fall of 1944 while in military service. In February, 1945, he had an attack of acute otitis media. During the succeeding years he had repeated attacks of pneumonia, otitis media, mastoiditis, sinusitis, and later enteritis and sprue. He was hospitalized many times, and differential studies of his blood picture were carried out 62 times. Immunologic and bacteriological studies were also repeated many times. During hospitalization from January to April, 1955, the patient was treated for the first time with an intramuscular injection of human gamma globulin. Subsequently these injections of gamma globulin were repeated at monthly intervals, and since then the patient has remained free from infections and has been able to resume his occupation, after having been unable to work for several years. The extreme susceptibility to infections was apparently due to the inability to form antibodies. This case and those reported in the literature indicate that successive septic complications are frequently of the same type. These patients have repeated attacks of those infections in recovery from which humoral antibodies play a part. The functional antibody insufficiency is accompanied by hypoglobulinemia or agammaglobulinemia, by a lack of plasma cells and of reticular cells that have phagocytic functions, and by atrophy of lymphatic tissue. The terms agammaglobulinemia or hypoglobulinemia take into account only the electrophoretically demonstrable globulin fraction; while they are correct, they are too narrow and do not take account of the essential point. The term "antibody deficiency syndrome" is therefore regarded as more appropriate.

Chorionic Gonadotropin in Geriatrics. A. T. W. Simeons. J. Am. Geriatrics Soc. **4**:36-40 (Jan.) 1956 [Baltimore].

The control of obesity and of associated conditions such as diabetes, gout, rheumatism, hypercholesteremia, arterial hypertension, myocardial insufficiency, and certain dermatoses is difficult in elderly patients because when they are given a diet that is restricted calorically to bring about a loss of weight, the body often tends to sacrifice normal fat rather than its pathological accumulation. This dilemma has been largely overcome by the recent demonstration that small daily doses of chorionic gonadotropin derived from urine of pregnant women render abnormal adipose tissue readily available for making up the deficit of a calorically inadequate diet. The gonadotropin-diet method of reducing does not lead to anemia, hypoproteinemia, or avitaminosis and renders the supplementary administration of vitamins superfluous. Moreover, normal deposits, such as the cutaneous fat, not only remain unaffected but are even restored when previous attempts to reduce weight have depleted them. A dose of 125 international units of chorionic gonadotropin is administered daily by deep intragluteal injection. Larger doses do not enhance the results, and a wider spacing is unsatisfactory. The patient is told to eat without any restriction during the first three days, even at the risk of putting on further weight. This is important to make sure that the normal reserves are well stocked and also because it takes about three days before the abnormal fat becomes metabolically available. From the fourth day onward the diet is restricted to 500 calories daily; there are two meals only, each containing 100 gm. of lean meat (veal, beef, chicken breast, fish, prawns, crayfish) weighed raw, with all fat removed before grilling or boiling; a normal serving of low-calorie vegetables or salad, one kind at a time, prepared without

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The place of publication of the periodicals appears in brackets preceding each abstract.

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oil or butter; one unsweetened rusk, weighing about 10 gm.; an apple or an orange; and salt, pepper, and vinegar as desired. The quantity of fluid is not restricted, but only tea, coffee (without sugar and with only one tablespoonful of milk in 24 hours), and water may be taken. The juice of one lemon is allowed daily. Under the effect of gonadotropin the obese person can continue this diet for several weeks without discomfort. There is no hunger. The average loss is about 1 lb. per day, though in very fat patients it can be as much as 2 lb. daily. The diet should be continued for three days after the last injection, that is, until the effect of the gonadotropin has worn off, because during the period when the hormone is effective, the slightest deviation from the prescribed diet results in a marked increase of weight (far in excess of the weight of the extra food consumed). Patients should be warned that under no circumstances may they take laxatives. One stool every third day is normal provided plenty of water is taken. If there is a longer interval, it can be corrected with a glycerin suppository. In the patients who show a tendency to regain weight, the treatment can be repeated periodically. The method is effective regardless of the basal metabolic rate, sex, age, and the status of gonadal function. The treatment has a regulatory effect upon arterial tension. An abnormally high level of blood uric acid is reduced. In patients who previously have had gout, an acute attack sometimes occurs during the treatment. However, they then remain free of further attacks after their weight is normal and if they do not regain weight. The diet lowers the level of blood sugar; patients resistant to insulin do particularly well. In rheumatoid arthritis the effect of weight reduction by the gonadotropin-diet method resembles so closely that of the administration of corticotropin that it seems that the secretion of this hormone is stimulated. The involved stimulation of the pituitary results in the increased secretion of other gonadotropic hormones. In some women regulation of the menstrual cycle and conception follow.

Antibiotics and Nutrition. F. Grande. Antibiotic Med. **2:**59-65 (Jan.) 1956 [New York].

The author's review of the literature on the relationship between antibiotics and nutrition revealed that the nutritive processes of the human organism are modified when subjected to the therapeutic action of antibiotics and that changes in the patient's nutritional state can affect the success of the chosen therapy. The physiological response of the organism to infection and the processes of repair and convalescence depend on a satisfactory state of nutrition, and it is therefore natural that diet should occupy a preeminent role in the treatment of infections. The idea of putting the febrile patient on a light diet dominated medicine for many years. Later, the application of physiological methods to the study of metabolism in the febrile subject showed the advantages of a high caloric diet in the treatment of typhoid fever and the importance of adequate nutrition in other infectious diseases. There are many practical difficulties in the feeding of the febrile patient: his appetite is commonly poor, and he frequently manifests symptoms of digestive intolerance. Hence, it is not sufficient to prescribe a theoretically suitable diet; it is also essential to ascertain how it may be ingested by the patient without causing distress or manifestations of intolerance. One way of obviating the practical difficulties consists in supplementing the diet with the most important nutrients, thus making sure that the patient's requirements are adequately met. This is the rationale for the increasingly widespread use of essential vitamins and minerals as supplements to the treatment of infections with antibiotics.

Syncope. A. Aarseth. Tidsskr. norske lægefor. **75:**841-844 (Dec. 15) 1955 (In Norwegian) [Oslo, Norway].

Syncope can result from a variety of conditions, ranging from insignificant episodes to the gravest disorders. In most cases certain diagnosis can be made on the basis of careful history and a thorough physical examination supplemented by simple laboratory tests. In some cases special examinations may be required. The results must be interpreted in close connection with the clinical examination. It may be difficult to distinguish between syncope and epilepsy or epileptic equivalents; continued observation and possibly a therapeutic attempt will as a rule clarify the diagnosis. In the most frequent types of syncope, carotid sinus syncope and that resulting from orthostatic hypotension, the therapy is simple and effective—the patient is placed in a horizontal position, generally with elevated extremities. In orthostatic hypotension use of ephedrine, Sympatol or amphetamine may be useful, but there are often undesirable side-effects. Gynergen has also been used. Treatment in hyperirritable carotid sinus syncope is indicated only if there are spontaneous attacks. In the bradycardic form, use of atropine is the best means of treatment; ephedrine can also be applied. If attacks continue in spite of adequate medical treatment, operative treatment must be considered. In Adams-Stokes attacks, the genesis must be established before treatment is instituted. If the cause is paroxysmal ventricular tachycardia or flutter, quinidine and Pronestyl can be tried, but isopropylarterenol has been considered the best agent. In total block with long-continued ventricular standstill, quinidine and Pronestyl are contraindicated; in such cases epinephrine is applied, and when there are repeated attacks ephedrine is given prophylactically. If the attacks occur with alternating partial and total block, digitalis is given to make the total block permanent. In paroxysmal tachycardia with syncopic attacks, treatment with vagus-stimulating procedures can be tried and lanatoside, quinidine, or Pronestyl used.

The Intravenous Glucose Tolerance Test. L. J. P. Duncan. Quart. J. Exper. Physiol. **41:**85-96 (Jan.) 1956 [Edinburgh, Scotland].

Two indexes of glucose tolerance, the "total index" and the "increment index," derived from an intravenous glucose tolerance test, were defined and determined in 20 normal persons and in 15 patients with mild diabetes mellitus. The total index is based on the assumption that the rate of drop in the blood sugar level remains consistently proportional to the total value of glucose in the blood. The increment index is based on the assumption that the rate remains proportional to the increment value of glucose in the blood. The mean total index for 42 tests performed in 20 normal persons was 1.37, and the mean increment index was 3.68. The mean total index for 21 tests performed in 15 patients with mild diabetes was 0.71, and the mean increment index in these patients was 1.83. A loading dose of 25 gm. of glucose was used in all these tests. With a constant loading dose of glucose, both indexes are reproducible in any one person. By increasing the loading dose of glucose from 25 to 50 gm., significant increases of the total index were produced in eight normal persons and in six patients with mild diabetes. The increment index remained constant in both groups. As the increment index is reproducible in any one person within a twofold variation in the dose of glucose injected, it is the preferable measure of glucose tolerance. When accurate assessment of glucose tolerance is required, the intravenous test should be employed and the tolerance should be expressed as the increment index.

SURGERY

Staphylococcal Endocarditis After Mitral Valvulotomy: Report of Three Cases. J. C. Dalton, B. Williams and L. Atkins. New England J. Med. **254:**205-210 (Feb. 2) 1956 [Boston].

The authors present histories of three patients in whom bacterial endocarditis developed after surgery on the mitral valve. The three patients were from a group of over 150 patients who underwent mitral valvulotomy at the Massachusetts General Hospital after 1951. The offending organism was a penicillin-resistant Micrococcus (Staphylococcus) pyogenes var. aureus, in sharp contrast to the usual causative organism in bacterial endocarditis—Streptococcus viridans. Two patients received penicillin during the immediate postoperative period, and in all patients the Micrococcus recovered was penicillin-resistant. The autopsy findings in case 1 deserve special attention. The fenestration in the aortic valve was thought to represent the site of a previous bacterial infection. Subacute bacterial endocarditis involving this area could well be the explanation for the febrile episode occurring in the spring of 1954, nine months before death. It is of interest that the patient in case 3 also had had an earlier

undiagnosed febrile illness that may have been bacterial endocarditis. The Micrococcus was the only organism cultured from the blood of the patient in case 1 during life. This organism was repeatedly cultured both at the onset of the illness and at the time of the exacerbation after therapy had been discontinued. Despite the fact that Str. viridans was cultured from the vegetation on the heart valve at autopsy, there seems little doubt that the M. pyogenes var. aureus was the major offending organism. The clinical picture in cases previously reported, as well as in the three reported here, was variable. The onset varied from two days postoperatively to as long as three months after the intervention. Micrococcic endocarditis is usually regarded as an acute febrile illness heralded by a sudden onset of chills and fever. However, there may be a subacute period of nonspecific symptoms and low-grade fever. This was present in two of the three patients and has been previously observed by others. Awareness of this undramatic period preceding the onset of frank chills and fever and lasting sometimes as long as two or three weeks will facilitate earlier recognition of micrococcic endocarditis.

Endocavitary Aspiration in the Treatment of Lung Abscess. V. Monaldi. Dis. Chest **29:**193-201 (Feb.) 1956 [Chicago].

The endocavitary suction drainage proposed by the author in 1938 for the treatment of tuberculous cavities was later adapted to the treatment of other pathological cavities of the lungs and particularly abscess cavities. Between 1939 and 1951, the reports were published of 89 cases of lung abscess in which endocavitary suction drainage was practiced by other workers, and 83 of the patients made a complete recovery. Of 38 patients with lung abscess in whom endocavitary suction drainage was used by the author and his co-workers in Naples, Italy, 33 (87%) recovered and 5 were therapeutic failures; in one of the 5, fatal hemoptysis occurred in the course of the treatment, in another patient treatment was ineffective in the presence of a serious lobular pluricavitary process, and in three patients with bronchiectasis the abscess became chronic. Four illustrative cases are described in men between the ages of 34 and 55 years in whom endocavitary aspiration was continued for from 15 days to three months. Within a few days all toxic manifestations, cough, and purulent expectoration subsided; the liquid matter drained by suction turned into serous fluid within one to three weeks; simultaneously with the reduction of the cavitary space, increased translucency of the surrounding tissue and thinning of the cavitary walls resulted; after complete cleansing of the walls of the cavity and the disappearance of the space, a few more days of treatment were required to obtain a complete recovery. Combined treatment with endocavitary suction drainage and endobronchial administration of antibiotics hastened the recovery in patients with both unilateral and bilateral lung abscesses.

Surgical Treatment in Tuberculosis Complicated with Pulmonary Emphysema. R. W. Newman, P. M. Huggin, C. L. Butler and M. C. Bowman. J. Thoracic Surg. **31:**125-139 (Feb.) 1956 [St. Louis].

The aim of present-day surgical treatment in pulmonary tuberculosis is not only to correct the inflammatory process but also to keep pulmonary function at its highest level. Diffuse airway obstruction of the kind commonly found in obstructive emphysema and in severe compensatory emphysema is the principal cause of operative and postoperative difficulty, and since the complications to which it gives rise seriously impair the cardiopulmonary reserves, its presence should be investigated and recognized before the operative procedure is decided upon. Comparison of the results obtained by surgical treatment in 30 patients with tuberculosis complicated by moderate to far-advanced emphysema with those obtained in a parallel group of 259 patients without significant emphysema treated during the same three-year period showed that postoperative complications and morbidity were much more frequent and severe in the emphysematous than in the nonemphysematous group. All the patients were treated medically with supervised bed rest and long-term antimicrobial therapy, and some were treated with temporary collapse measures, such as pneumoperitoneum and occasionally pneumothorax. Patients with pulmonary emphysema present a striking and characteristic clinical picture during the postoperative period. A prominent sign of the condition, which is best described as the "emphysema syndrome," is dehydration, manifested by poor tissue turgor; dry skin; dry, beefy-red tongue; and oliguria. This dehydration, which is present in spite of an apparently adequate water intake, is related chiefly to an increased insensible loss of water through the respiratory system resulting from the hyperventilation of emphysema. Respiratory acidosis may be shown by dyspnea that is out of proportion to the work being performed; when very severe, it may be accompanied by weakness, disorientation, stupor, and coma. Signs of toxicity, such as moderate fever, tachycardia, and leukocytosis, are usually the result of inability to rid the lung of bronchial secretions by effective coughing. Some of the postoperative difficulty caused by the emphysema syndrome can be overcome by the use of tracheostomy at the time of operation. The frequent use of endotracheal suction or bronchoscopy to prevent atelectasis and to maintain a patent airway is indicated in patients not subjected to tracheostomy. Careful attention should be given to fluid and ion requirements, and the patients should receive the usual antibiotic therapy. The magnitude of the problem presented is shown by the fact that complications occurred in all but 8 of the 30 emphysematous patients and were especially severe in those subjected to resection. Major secondary operations were required to correct the complications in nine patients; four had to have prolonged chest drainage before they recovered, and seven of those who have survived have active disease or serious residual complications. The incidence of bronchopleural fistula with empyema, which was responsible for the two deaths (6.6%) that occurred in this group, and of persistent air leak without empyema was remarkably high among the emphysematous patients. These results are in marked contrast to those obtained in the nonemphysematous group, in which there were only eight deaths (3.1%). Bronchopleural fistula (with or without empyema) was not the cause of any of these deaths and was present in only 10% of the cases.

Pantothenic Acid in Prophylactic Treatment of Postoperative Paralytic Ileus. C. Orecchia. Minerva med. **46:**1610-1612 (Dec. 5) 1955 (In Italian) [Turin, Italy].

Pantothenic acid was given intramuscularly immediately after major surgical operations to 118 patients in extremely poor general condition in order to prevent the onset of paralytic ileus and to favor the resumption of intestinal motility. The patients received either one 50-mg. vial of calcium pantothenate every 6 hours or one 500-mg. vial of pantothenic acid every 12 hours. The injection was not painful, and side-effects ascribable to an excessive amount of pantothenic acid or to intolerance were not observed. One hundred patients who had been subjected to major interventions in the same period served as controls and did not receive pantothenic acid. The results were excellent; the first intestinal movements appeared within 48 hours after the institution of the therapy, and they were completely restored within 72 hours in all but one patient. In this extremely ill patient, in whom an ovarian tumor had been removed and a loop of the ileum and the sigmoid flexure had been resected for metastasis, the movements were restored only after five days of therapy. As a rule, the intestinal movements appeared only after repeated injections, which seems to suggest that the substance must be present in the organism in a certain concentration before it can stimulate peristalsis. Pantothenic acid did not cause violent contractions of the intestine, and this suggests that the preparation does not stimulate intestinal motility directly but favors peristalsis by reducing or suppressing the causes or the stimuli that inhibit it. Orecchia recommends the administration of pantothenic acid to patients who undergo major abdominal operations (diffuse peritonitis, extensive intestinal resection) and to all surgical patients in whom there is a postoperative delay in the resumption of intestinal motility. The therapy, to be effective, must be rather prolonged. A few injections of pantothenic acid have no effect. The author's treatment is based on the assumption that a lack of pantothenic acid in the organism of surgical patients, to-

gether with other causes such as infection or circulatory disturbances, contributes to the causation of postoperative paralytic ileus.

Ligation of the Inferior Vena Cava After Nephrectomy. R. M. Bolman and R. P. Lloyd. A. M. A. Arch. Surg. **72:**194-196 (Feb.) 1956 [Chicago].

The patient was a 69-year-old woman who had undergone a right-sided nephrectomy 47 days before. The course of convalescence had been normal until 45 days after the operation, when she experienced a sharp pain in the right side of the abdomen, radiating to the shoulder, neck, and right chest. She vomited two hours later. She had continuous pain over her entire abdomen and she continued to vomit. When she was brought to the hospital on the second day, the tentative diagnosis was intra-abdominal hemorrhage of undetermined origin. When the abdomen was opened, the blood was found to escape through a hole in the posterior parietal peritoneum overlying the nephrectomy site. There was a tense hematoma behind the duodenum, pancreas, and liver, and the blood entered the abdomen not with force or pulsation but with alarming persistence. Since evacuation of the hematoma would release the tamponade and cause disaster, it was decided to ligate the inferior vena cava. The mesentery overlying the inferior vena cava was opened and the left renal vein was identified to make certain that the ligature would be placed below it. A heavy silk ligature was then passed under the vessel, and when it was lifted the bleeding stopped. This was repeated several times to be certain of cause and effect. The vena cava was then ligated with three separate silk ligatures; the hematoma was opened and evacuated. The patient made an uneventful recovery. The authors believe this to be the first instance of ligation for this indication. They suggest that this might be of help to the urologist in the management of postnephrectomy venous hemorrhage at any stage or in the control of hemorrhage from the renal veins or vena cava traumatized by any cause.

Fat Embolism Following Abdominal Surgery: Report of a Case. H. L. Schofield Jr. and H. R. Pratt-Thomas. J. South Carolina M. A. **52:**7-9 (Jan.) 1955 [Florence, South Carolina].

The authors present the history of a man, aged 44, who had long been an alcoholic and who had had recurrent attacks of colicky pain the the right upper abdominal quadrant, nausea, and vomiting since 1945. Clay-colored stools had been noted on several occasions. A nonfunctioning gallbladder was found, and it was thought advisable to perform a cholecystectomy. When this was done, a small hard mass in the head of the pancreas was removed for examination. A specimen was taken also from the edge of the liver. Late on the day of operation the patient had generalized clonic convulsions, lasting about three minutes. Convulsions occurred again on the following morning, and he was confused and disoriented much of the time. Wound dehiscence occurred eight days after operation, and the wound was closed under local anesthesia. The patient's temperature rose to 107 F (41.7 C), and his general condition deteriorated rapidly. He died 24 hours later, at which time his rectal temperature was recorded as 110 F (43.3 C). The source of the fat, which was clearly demonstrated within the lungs and suspected within the brain, was most likely the operative area in the pancreas. There was disruption of adipose tissue in this area, and it is likely that free fat was liberated; veins were severed, and increased pressure from the ensuing inflammatory reaction followed. These factors would furnish the generally accepted conditions under which fat embolism occurs. It appears most probable that the fat entered the pulmonary circulation at the time of operation.

Influence of Hormonal Therapy for Ulcerative Colitis Upon the Course of Surgical Treatment. M. A. Hayes and S. D. Kushlan. Gastroenteroloy **30:**75-84 (Jan.) 1956 [Baltimore].

Hayes and Kushlan present observations on 24 patients with chronic ulcerative colitis. Of the 13 patients operated on, 7 received or had received steroid therapy (corticotropin and/or cortisone). Of the 11 not operated on, 5 were treated with steroids. Of the 12 who had been treated with steroids, either with or without operation, there were only 4 in whom no serious complications developed. In three patients who were subjected to a one-stage ileostomy and subtotal colectomy while under steroid therapy, severe exacerbation of the disease developed in the retained large intestine segment as the adrenocortical steroids were withdrawn. In one instance, the bleeding and associated small intestine dysfunction were severe enough to require an abdominoperineal resection of the rectum. Serious infections developed in 3 of the 12 patients receiving steroid therapy; tuberculous pneumonia in one, and bacteremia in two. One of the latter died. Two patients had a clinically unrecognized perforation of the colon while under steroid therapy, and one of these died. One patient with diabetes mellitus displayed an intensification of glycosuria while receiving steroids. Status epilepticus developed immediately after operation in one patient (without personal or familial history of convulsive disorder) who was treated with corticotropin for one month prior to operation. Shock due to relative adrenal cortical insufficiency accounted for 5 of a total of 15 complications. There was only one serious complication among the 12 patients not treated with steroids. Although serious complications occur much more frequently in patients who receive steroid therapy than in those who do not, there is no doubt that the addition of adrenocortical steroids to the armamentarium of the physician caring for patients with ulcerative colitis has proved valuable. The tremendous improvement in the clinical status of the seriously ill, preparatory to operation, is a significant achievement. The authors present a program for the prevention or early recognition and treatment of any possible complications of steroid therapy.

NEUROLOGY & PSYCHIATRY

Serologic Studies on Poliomyelitis Contacts. E. Berger, L. A. Halff and K. Weisser. Schweiz. med. Wchnschr. **86:**38-41 (Jan. 14) 1956 (In German) [Basel, Switzerland].

Complement-fixation tests for poliomyelitis were made on members of 14 families in whom one member had contracted poliomyelitis. The reactions to these tests indicated that, in 6 of the 14 families others had become infected with the poliomyelitis virus, although these infected members showed no paralysis or other symptoms characteristic of poliomyelitis. The serum complement-fixation tests in four families indicated no additional infections, whereas in four others no definite statement was possible because the period of observation was too short. Complement fixation tests were also made on 27 children, from 4 to 7 years of age, who attended the same kindergarten as one of the poliomyelitis patients. The reactions indicated that infection had definitely taken place in 7 and probably in 8 others of the 27 children. The authors deduce that the virus of poliomyelitis is readily transmitted, since in more than half of the young and presumably nonimmune contacts there developed complement-binding antibodies, the formation of which must be attributed to a new infection with the poliomyelitis virus.

Roentgen Therapy of Cerebral Glioma: Considerations on 102 Treated Cases. L. Campi, P. Trinchieri and S. Giobbe. Minerva med. **46:**1657-1667 (Dec. 8) 1955 (In Italian) [Turin, Italy].

Results are reported on 102 patients with cerebral neoplasms who were treated at the University of Turin Institute of Radiology from 1946 to 1952. The location of the neoplasm was determined by the clinical, electroencephalographic, pneumoencephalographic, and arteriographic findings, and the diagnosis was confirmed histologically in all the cases on examination of a surgical or biopsy specimen or at autopsy. Partial or total removal of the tumor was followed by roentgen therapy in 24 patients who had glioblastoma multiforme and in 5 with astrocytoma. Roentgen therapy was the only treatment given to 56 patients with spongioblastoma multiforme, 4 each with

astrocytoma, ependymoma, and oligodendroma, and 5 with medulloblastoma. A daily dose of 200 to 300 r was given until the total dose of 4,000 to 6,000 r as measured on the surface was reached. The dose for carcinoma was 1,500 to 2,400 r. The therapy lasted for from three to four weeks. The marked side-effects that are often observed during the initial phase of roentgen therapy did not occur in these patients. Instead, the objective and subjective improvement was so marked in some patients from the beginning of the therapy that they were able to resume their normal activities. One-third of the patients received no benefit from the therapy, and most of them died within the first post-treatment year. The patients who had received both surgical and roentgen treatment lived longer than those who had received the latter only: 33% of the patients with glioblastoma multiforme who had received the combined treatment died within 18 months from the institution of therapy as compared with 79% of those who had received roentgen therapy only. The maximum survival time of patients with astrocytoma who had received roentgen therapy only was 18 months, whereas those who had received the combined treatment lived as long as 36 months. Thus the treatment of choice for cerebral neoplasms is surgical intervention, when it is not contraindicated, followed by roentgen therapy. The latter is a valuable therapy in cases of inoperable cerebral neoplasms and can bring about long remissions. As a rule, irradiation of cerebral tumors is almost always advisable. The dose that seems to give the best results in carcinomas is of about 5,000 r emitted with tensions of 200 to 400 kV in gradually increasing quantities according to the patient's response. Larger doses are contraindicated and are harmful to the neoplastic focus and the perifocal tissues as well as to the general condition of the patient. To obtain good results it is indispensable to know the exact size of the neoplasm and its location. In the authors' series the type of neoplasm most sensitive to roentgen therapy was the medulloblastoma, followed by astrocytoma, glioblastoma multiforme, and, last, ependymoma. The oligodendroma was not affected by the therapy.

GYNECOLOGY & OBSTETRICS

Endemic Micrococcic (Staphylococcic) Puerperal Mastitis: Epidemiological and Pathogenic Considerations: Evaluation of Consequences on the Newborn Infant. E. Ferrario. Minerva ginec. **7**:768-776 (Nov. 15) 1955 (In Italian) [Turin, Italy].

Mastitis caused by Micrococcus pyogenes var. aureus is reported in 23 women during puerperium, and micrococcic infections are reported in eight of these women's newborn infants. Infection in an infant (retroauricular pemphigus) occurred before the mastitis in one instance only. Large doses of erythromycin gave excellent results, and its parenteral administration never led to chronic mastitis or to the forms of sarcomalike hardening that have been observed after the administration of penicillin. Ferrario feels that the main point in the pathogenesis and prophylaxis of puerperal mastitis lies in the close mother-child relationship. He reviews the mode of invasion of the micrococcus into the organism and the possible mechanisms of onset of the infection. The mother may be the source of the infection of the newborn infant or vice versa, or both mother and infant may become contaminated concurrently, or they may acquire the infection through two different strains of micrococci. As to the advisability of interrupting breast feeding in the presence of micrococcic infection in the mother and/or infant, the following suggestions are offered. 1. When the child is primarily infected, milk should be taken from the mother's breast and then fed to the child. 2. When the mother has unilateral mastitis, the child can continue to nurse from the contralateral side, whereas when she has bilateral mastitis, artificial feeding becomes imperative. Despite the fact that brilliant results were reported with penicillin in the treatment of puerperal mastitis soon after the drug became available, the incidence of the infection has greatly increased during the last few years, very likely because of penicillin resistance. The drug of choice in the treatment of this mastitis is erythromycin.

On the Influence Exerted in Vitro by Ovarian Hormones on the Serum Histaminolytic Activity. P. Quaini. Minerva ginec. **7**:777-780 (Nov. 15) 1955 (In Italian) [Turin, Italy].

The in vitro influence of the estrogen hormone on the histaminolytic activity was studied in the serums of 21 women during the course of pregnancy that was either normal or complicated by toxemia. The influence of progesterone on the same activity was tested in the serums of 20 women who were in the last two trimesters of pregnancy that was also either normal or complicated by toxemia. For the first group of studies, either 1 mg. of estradiol benzoate in an oil solution or 0.1 mg. of estradiol in aqueous glycerin solution or in crystal form was added to the serum to be tested. For the second group of studies, 1 mg. of progesterone was added to the serum. Estradiol in the crystal form caused a marked increase (of about 45%) in the histaminolytic activity of the serum of all the women. This increase was less marked and less constant with the other forms of estradiol used, probably because the mediums in which the hormone was incorporated prevented the complete activity of the estrogen on histaminase. Progesterone inhibited the serum histaminolytic activity about 50%. In view of the potentiating action of estrogen on the serum histaminase, the author advances the hypothesis that the beneficial action of the follicular hormone in instances of threatening abortion may, at least in part, take place by means of a potentiation of the serum histaminase, thus causing a greater destruction of histamine, which exerts a marked ecbolic action. As to the efficacy of estrogen therapy in toxemia of the last trimester of pregnancy, the author states that the estrogens may exert their action by favorably influencing the serum histaminolytic activity, which is abnormally diminished in toxemia of pregnancy. Studies are needed to test these hypotheses.

PEDIATRICS

Hormone Therapy of Multiple Rheumatoid Arthritis (Still's Disease): With Clinical and Pathogenetic Remarks. J. Marie and G. Sée. Pédiatrie **10**:811-823 (No. 8) 1955 (In French) [Lyon, France].

The opinion is expressed that multiple rheumatoid arthritis (Still's disease) shares a common etiology with rheumatic fever. There are strong clinical resemblances, and both are connected with streptococcic pharyngeal infection. These two diseases with chronic infantile rheumatism form a trilogy in the sense that they are different responses to the same toxin. Fourteen children with multiple rheumatoid arthritis were treated with cortisone or hydrocortisone. In over half the group the disease began before the age of six years. Periarticular tumefaction causing early limitation of movement is characteristic of multiple rheumatoid arthritis, as are moderate anemia, leukocytosis, elevated sedimentation rate, little change in fibremia, and increased antistreptolysin titer. On a short-term basis, results of hormone treatment are excellent. Pain disappears within the first few days, and improvement of the other symptoms and signs follows within the next few weeks. Relapses, however, are common. In the authors' group, seven patients obtained good final results: three of them were left with minor sequelae, but their disease appears to be stabilized and they are leading normal lives; two appear to be completely cured, and two are in good health on a maintenance dose after recent treatment. Two patients had fair results: one was treated late in the course of his disease and had only a partial remission, while the other relapsed so often that he had to be put on maintenance therapy. Three children died from causes not directly related to their disease. Two were lost to follow-up.

Protracted Course of Icterus Gravis Neonatorum and Its Treatment by Exchange Transfusion. K. Betke. Monatsschr. Kinderh. **103**:477-480 (Nov.) 1955 (In German) [Berlin, Germany].

The fate of a child with erythroblastosis fetalis with severe jaundice is generally decided within the first 48 hours of extrauterine existence, because by this time irreparable damage

has been produced, if the process is sufficiently severe. Exchange transfusions in such infants should be started within the first 24 hours. This general rule should not be interpreted, however, to mean that an exchange transfusion is necessarily useless after this period has elapsed. The author presents three cases that demonstrate that an exchange transfusion can be effective at a later period. In the first of the three infants, who had Rh incompatibility, signs of erythroblastosis were not yet present on the third day after delivery. Then jaundice appeared; it became constantly more severe, and the child gradually became drowsy and died in coma with signs of sepsis. The author feels that this child might have been saved by an exchange transfusion at a later date than is generally assumed effective. In the second child, who also had an Rh incompatibility and whose clinical symptoms greatly resembled those of the first child, an exchange transfusion was carried out on the sixth day. This child completely recovered, and when it was one year old no residual changes were evident. The third child had an incompatibility to blood group A. In this child, a gradually deepening jaundice accompanied by severe impairment of the general condition became evident more than a week after delivery. An exchange transfusion in this infant was carried out on the 16th day of life, and rapid improvement resulted.

OPHTHALMOLOGY

Fat Embolism of the Retina: Demonstrated by a Flat Retinal Preparation. T. P. Kearns. Am. J. Ophth. **41**:1-2 (Jan.) 1956 [Chicago].

Fat embolism of the eye may follow extensive trauma in which long bones are fractured. There is a question as to whether the retinopathy of ocular fat embolism and Purtscher's traumatic retinal angiopathy are the same. The author presents the history of a 22-year-old man who was crushed between two vehicles. Examination revealed multiple fractures of the pelvis with transection of the urethra, a fracture of the sacrum, and fractures of the fifth lumbar vertebra, the midshaft of both femurs, and the midshaft of the tibia and fibula (compounded). The patient remained comatose, and since he never fully regained consciousness the possibility of cerebral fat embolism was suspected. Ophthalmologic consultation was requested to determine evidence of fat embolism. Scattered over both retinas there were large fluffy white patches that appeared to be localized areas of edema. The smaller ones had the appearance of fresh cotton-wool patches seen so frequently in other types of retinopathy. The coma deepened, and the patient died. At autopsy the posterior segments of both globes were removed and, after fixation in formalin, the retinas were dissected free and spread flat on a glass slide. They were stained first with Sudan IV and then counterstained with hematoxylin. They were mounted with Mallory's mounting solution and the edges of the cover glass were sealed with Duco cement. Many of the retinal vessels contained fat. The author concludes that this patient had a retinopathy similar to Purtscher's traumatic retinal angiopathy.

Further Investigations on the Virus of Behcet's Disease. N. Sezer. Am. J. Ophth. **41**:41-55 (Jan.) 1956 [Chicago].

Sezer mentions earlier studies in which he demonstrated that Behcet's syndrome is of viral origin. He presents observations on 20 new cases of Behcet's syndrome. They revealed that, besides the three cardinal symptoms (iridocyclitis, aphthae in the mouth, and genital ulcerations) an articular lesion, resembling acute polyarticular rheumatism and recurring frequently, is also present. Behcet's syndrome can be diagnosed by laboratory examinations before the eye manifestations start. It has not been possible to diagnose the disease by laboratory examinations in patients who have only recurrent iridocyclitis with hypopyon and in whom the other signs have not yet become manifest. In the present series of cases, the appearance of the disease in three brothers living in the same house throws light on its epidemiology and indicates that the disease is communicable. Viremia is always present. It increases during every attack and then gradually disappears in one to two months. The immunity antibodies of the disease show a negatively correlated cycle with viremia: as the antibodies get fewer, the degree of viremia increases, and when the antibodies reach the highest level, viremia decreases. New crises appear in association with viremia. Urinary excretion of the virus seems to correspond to the degree of viremia. The use of cortisone in two cases increased the severity of the symptoms and caused a decrease of the complement-fixation reaction. This result was of value in bringing about an experimental disease, as well as in producing typical iridocyclitis with hypopyon in the eyes of rabbits by applying cortisone systematically before and after inoculation.

A Case of Behcet's Disease. B. H. Zeavin, M. J. King and R. S. Gohd. Am. J. Ophth. **41**:55-60 (Jan.) 1956 [Chicago].

A 54-year-old man was found by one of the authors to have old keratic precipitates and posterior synechias in the right eye, together with ulcers in the mouth and one on the penis. At that time he had no hypopyon, but he had been unable to work for three months because of poor vision. He was admitted to the Massachusetts Eye and Ear Infirmary for investigation. The recurrent attacks of aphthous ulcers of the scrotum, penis, and mucous membrane of the mouth and the almost pathognomonic hypopyon iritis fit very well into the classical descriptions of Behcet's syndrome. The recurrent, red, tender, subcutaneous indurations on the legs were diagnosed clinically by a dermatologist as erythema nodosum, another commonly described manifestation of the disease. Another lesion mentioned by other authors is vitreous hemorrhage, one of which marked the onset of this man's ocular complaints. Consultants specializing in arthritis felt that this man's joint symptoms were probably due to osteoarthritis. Dr. Igersheimer, who worked with Behcet on his original patients, saw the patient in consultation and believed that this man's condition conformed to the entity, Behcet's syndrome. He advised against any heroic measures directed at this man's sinuses or lungs, since in the past all treatments had proved futile in preventing the progression of the eye lesions. The etiology of Behcet's syndrome is unknown. Many theories have been advanced in the past and subsequently discarded. At present, a theory of virus etiology has gained the widest acceptance. Behcet, when first describing the syndrome, suggested that it was caused by a virus and demonstrated inclusion bodies in smears made from the contents of the aphthous ulcers and the hypopyon. This has never been substantiated. In 1953, Sezer reported the isolation of a filtrable virus from the subretinal fluid. The authors attempted growth of a virus from the hypopyon, but, like Sezer's, their cultures were sterile. Permission was not granted to extract vitreous for culture of a filtrable virus, and hence Sezer's other experiments could not be confirmed.

The Neurological Complications of Behcet's Syndrome. C. A. Pallis and B. J. Fudge. A. M. A. Arch. Neurol. & Psychiat. **75**: 1-14 (Jan.) 1956 [Chicago].

Behcet's syndrome consists of relapsing iritis, often with hypopyon, and recurrent attacks of oral and genital ulceration. Other symptoms occasionally appear. Erythema nodosum may occur in a third of the cases, and thrombophlebitis is not infrequent. Neurological symptoms are uncommon. The authors were able to trace records of 11 patients in whom neurological symptoms developed, and these complications proved fatal in four instances. Involvement of the nervous system carries a serious prognosis. These four deaths, all in young adults, are the only ones recorded in Behcet's syndrome. In these 11 patients neurological complications usually occurred between the second and the fifth year of the disease and did not develop particularly early in the fatal cases. The duration of the "neurological illness" in the latter group varied from three months to two years. The authors present two cases of their own observation. The first had a myelitic syndrome, and the second a progressive striatal and pyramidal syndrome with brain stem signs. In both of these cases the serum fibrinogen level was raised, an abnormality not hitherto recorded in Behcet's syn-

drome. The following patterns of involvement of the nervous system are found in Behcet's syndrome: (1) a brain stem syndrome, (2) a meningomyelitic syndrome, and (3) an organic confusional syndrome (possibly encephalitic). The available pathological evidence and the pathogenesis of the neurological complications are discussed in an attempt to clarify the etiology of the disease. It is concluded that neither the hypothesis of a thrombotic disorder nor that of an "allergic encephalomyelitis" will adequately explain the clinical and pathological data. There is increasing evidence that a virus, occasionally exhibiting neurotropic tendencies, is the cause of this illness.

PUBLIC HEALTH

Mutations as Cause of Disease. M. Westergaard. Ugeskr. læger **117**:1593-1599 (Dec. 8) 1955 (In Danish) [Copenhagen, Denmark].

The mutation problem is a problem of evolution. New variations in populations originate through mutation. There is reason to believe that the increased application of ionizing sources of radiation for civil and military purposes involves a risk of greater frequency of mutation of hereditary germs, and the growing use of chemical substances in medicine and industry may possibly entail a similar danger. In countries with a high medical and social standard the load of mutations is probably increasing because many "sick genes" live longer due to the advance in medical science. Such populations will doubtless be more sensitive than more primitive communities to an increase in the frequency of mutation of genes and therefore have a special interest in reducing the risk as far as possible, first and foremost by strict protection against radiation. That it may be done effectively, strongly intensified research to fill the gaps in our present knowledge is required. Human genetic research will in the years to come be more and more important for the community. It is necessary to know far more about the hereditary structure of the human population, the distribution of hereditary diseases, and variations from generation to generation. Genetic registration was started early in Denmark. If the load of mutations of the present generation could be compared with that of the previous generation, statistics would surely show an increase, but to correlate it with definite factors would be difficult. There would, for instance, have to be genetic registration of persons such as radiologists who in their daily lives are exposed to more ionized radiation than normal. At the same time, contact between medical genetics and experimental research on heredity will be increasingly necessary, and the results of research on chemical mutation should be followed attentively.

Comparison of Rheumatoid (Ankylosing) Spondylitis and Crippling Fluorosis. C. L. Steinberg, D. E. Gardner, F. A. Smith and H. C. Hodge. Ann. Rheumat. Dis. **14**:378-384 (Dec.) 1955 [London, England].

Crippling fluorosis and ankylosing (rheumatoid) spondylitis present a confusing similarity; both are characterized in their advanced stages by a "poker-back" spine with calcification of the ligaments of the spinal column. Rheumatic pains of various degree are common in the early stages of both diseases. Crippling fluorosis is a specific form of skeletal disease that follows the absorption of excessive amounts of fluoride for prolonged periods of time. Osteosclerosis and exostoses are the outstanding findings; mottled dental enamel may be seen if the period of absorption includes the first eight years of life. As the disease progresses, all bones eventually become sclerotic; there seems to be a predilection, however, for this to occur in flat bones, such as those of the pelvis and jaw and especially the lumbar vertebral system. In severe cases, exostoses become evident on the long bones and on the lower edges of the vertebrae. Eventually the vertebrae fuse together, the spinal ligaments become calcified at their points of attachment, and the typical rigid spinal column results. Crippling fluorosis of industrial origin was fully described by Roholm in his investigation in 1937 of the disease in Danish cryolite workers. The condition is also endemic in parts of India, China, Argentina, and South Africa, where water supplies contain from 2 to 16 parts per million of fluoride. As far as the authors were able to ascertain, no one has reported the fluoride content in the skeletal tissues of a patient with ankylosing (rheumatoid) spondylitis. They were able to study such a case; this man who had had ankylosing spondylitis for a period of 10 years died suddenly of a subarachnoid hemorrhage. Fluoride concentrations were determined for autopsy samples of rib, sacrum, ilium, vertebra, adhering soft tissue, and rib marrow. The fluoride concentrations were not increased above normal levels. Fluoride therefore cannot be held responsible for the bony changes in rheumatoid spondylitis. Roholm has shown that the skeletal tissues of patients disabled with fluorosis contain relatively high concentrations of fluoride. The authors present a table in which they compare the changes in rheumatoid spondylitis, crippling fluorosis, and metastatic carcinomas of the prostate or breast. The authors feel that recent public health undertakings in the United States, designed to reduce the incidence of dental caries by adding fluoride to the communal water supply, have increased the importance of this investigation. It would be unfortunate if these undertakings were erroneously accused of producing serious bone changes through the inadvertent diagnosis of ankylosing (rheumatoid) spondylitis as crippling fluorosis.

First Statistics on Systematic Prevention with BCG in France. R. Mande. Semaine hôp. Paris **32**:130-139 (Jan. 14) 1956 (In French) [Paris, France].

Vaccination with the Calmette-Guérin bacillus was made obligatory in France for certain groups in 1950 and for the population at large in some parts of the country in October, 1953. At present it is practiced in at least 49 of the 90 states. In a year and a half, about 181,554 children have been vaccinated. They were selected for vaccination by the tuberculin test alone, which method had excellent results as shown by the small proportion of accelerated vaccinal reactions. Vaccination was usually accomplished by scarification, sometimes intradermally, with no particular difficulties. After vaccination, the proportion of positive reactions to tuberculin was high. Side-effects from the vaccination were uncommon. About one in 2,000 children suffered an adenitis. The only alarming type of illness was primary infection in the weeks following the inoculation, of which 12 cases were observed among 181,000 children. These primary infections would have occurred regardless of BCG vaccination.

The Survival of Shigella in Sewage: I. An Effect of Sewage and Fecal Suspensions on Shigella Flexneri. Wen Lan Lou Wang, S. G. Dunlop and R. G. De Boer. Appl. Microbiol. **4**:34-38 (Jan.) 1956 [Baltimore].

The authors found, during a five-year study of irrigation waters in Colorado, that isolation of Shigella organisms is rarely successful, although Salmonella organisms are frequently recovered. The isolation of Shigella organisms from stools has likewise been unsatisfactory. As Shigella organisms are frequently found in human excreta, it seems likely that it is dangerous to consume raw fruits and vegetables irrigated with sewage-polluted water. A study was undertaken to investigate the survival of Shigella in sewage and sewage-contaminated irrigation water. Shigella flexneri II added to sterile sewage or to a fecal suspension would not grow on SS agar when transferred after 6 to 24 hours' exposure. On the other hand, transfers to LB agar indicated that the organisms were viable or even multiplying in these specimens. Some unknown factor or factors in sewage or fecal suspensions affected the organisms so that they grew only on media without inhibitive constituents. Autoclaving the sewage or fecal suspension was not responsible for the production of this effect, and no variant phenomenon was involved. This effect was reversed by adding sodium chloride (or potassium chloride) into fecal suspensions. With sewage, sodium chloride (or potassium chloride) also reversed the effect, but only when the pH was first adjusted to about 7.5. Sodium or potassium phosphate was just as effective as sodium chloride or potassium chloride in reversing the effect. It is suggested that the sodium or potassium ions are the essential elements in the reversal.

BOOK REVIEWS

The Give and Take in Hospitals: A Study of Human Organization in Hospitals. By Temple Burling, M.D., Edith M. Lentz, Ph.D., and Robert N. Wilson, Ph.D. Study conducted by New York State School of Industrial and Labor Relations, unit of State University of New York at Cornell University, with support and cooperation of American Hospital Association. Foreword by George Bugbee. Cloth. $4.75. Pp. 355. G. P. Putnam's Sons, 210 Madison Ave., New York 16; McAinsh & Co., Ltd., Toronto, Canada, 1956.

This volume has been needed for some time. While some of it is repetitious, particularly to those having contact with hospitals, in general several areas have been exhaustively studied from a new viewpoint. The study was initiated by the American Hospital Association and was conducted by three well-equipped researchers plus some additional field workers and an advisory commission. Five years were devoted to the study, which covered three hospitals in rural areas, two in small towns, and one in a metropolitan area. One was operated by a religious order. All were the so-called voluntary, nonprofit community hospitals. The authors are to be commended for their courage in attempting such a project. Anyone familiar with the problem has at least a superficial knowledge of the many difficult problems facing them. The modern hospital is an entirely new and different organization from the old type of hospital wherein people were placed to spend their last days and that were in most instances institutions used for housing the indigent. With the advent of the modern hospital came a realization that it is big business run by trustees, administrators, and clinical staff. This combination indicates the reason for the naming of this report "The Give and Take in Hospitals." For many years the boards of trustees of hospitals were made up of prominent and usually wealthy men willing to devote a small amount of time and perhaps a good deal of money to the operation of the hospitals. More recently such boards are made up of men willing to devote a great deal of time to this public service, at the same time aiding in the provision of the necessary money to operate the hospitals.

Hospital administrators are a new group, specially trained for this operation. Although several universities now provide courses in the smooth running of hospitals, the administrator frequently finds himself caught in a crossfire between the trustees and the clinical staff. The clinical staff is made up of physicians who have been recommended to the trustees by the staff. Doctors are individualists and find it difficult to accept dictation from lay people, whether they be trustees or lay administrators. The larger the hospital, the more highly specialized the staff. This frequently increases the conflicts. The nursing situation in the modern hospital also aggravates the problem. A recognized shortage of nurses exists. There are those who believe that nursing schools need a change in curriculum for training bedside nurses and that the training period for this group should and could be reduced to two years. There is also a shortage of teachers for training bedside nurses. The medical social worker is discussed in this volume. Here is a place where public relations is extremely important. The medical social worker should be carefully selected. Because the loved one being admitted to the hospital is the prime and chief concern of the parent or the children, the social worker should never be the hardened type. Unfortunately, social workers have been called meddlers by some. This they should never be. Close cooperation between the admitting officer and the social worker is needed. The book covers several other departments, including obstetric, surgical, outpatient, and laboratories. The report unfortunately did not deal with an increasingly important group known as the "committee for the improvement of the care of the patient." This comes down from the national level to the state level and into the community hospital. It is made up of representatives of the medical staff, administration, nurses, and laboratory personnel. On the whole, this book is well done. Harmony would prevail if all those involved in the care of hospital patients would apply its principles.

These book reviews have been prepared by competent authorities but do not represent the opinions of any medical or other organization unless specifically so stated.

Grundriss und Atlas der gynäkologischen Cytodiagnostik. Von H. Smolka, Dr. med., wissenschaftl. Assistent an der Universitäts-Frauenklinik kiel und H. J. Soost, Dr. med., wissenschaftl. Mitarbeiter der Fa. C. F. Boehringer & Soehne-Mannheim. Mit einem Geleitwort von E. Philipp, Dr. med., ordentl. Professor, Direktor der Universitäts-Frauenklinik Kiel. Cloth. 120 marks; $28.55. Pp. 166, with 274 illustrations. Georg Thieme, Verlag, Herdweg 63, (14a) Stuttgart, Germany (American zone); (agents in U. S. A. and Canada—Intercontinental Medical Book Corporation, 381 Fourth Ave., New York 16), 1956.

For a long time German gynecologists and pathologists were skeptical of the importance of cytology; this book written in German should therefore be helpful to German gynecologists, pathologists, and cytologists. It was not until 1953 that the first symposium on cytology by German cytologists interested in gynecology was held. This book is analogous to the well-known books on cytology written in English by Papanicalaou and Traut; Ayre; and de Allende and Orias, and is based on the authors' experience with about 35,000 smears. The book begins with a thorough review of the contributions made in cytology by investigators in different countries. In the following chapters the authors discuss the technique of obtaining and staining smears; the morphology of normal cells; the appearance of cells at different ages; changes in the cells due to administration of hormones; the effect of nonhormonal factors on the character of the cells; alterations in the cells due to endocrine disturbances; changes due to pregnancy, the puerperium, and abortion; differences in cells produced by inflammatory and other gynecologic disorders; the diagnosis of carcinoma; cell changes due to radium and roentgen radiation; cytodiagnosis from ascitic fluid; cytological investigations by means of the phase contrast microscope; and organization of clinical cytodiagnosis. Over half of the illustrations are in color; all are attractive and instructive. There is an extensive list of references on cytodiagnosis at the end of the book. The authors have produced an excellent book. The publishers also deserve much credit; however, the price of the book may limit its distribution.

Medical Department, United States Army: Preventive Medicine in World War II. Volume III: Personal Health Measures and Immunization. Editor in chief: Col. John Boyd Coates Jr., MC. Editor for preventive medicine: Ebbe Curtis Hoff, Ph.D., M.D. Assistant editor: Phebe M. Hoff, M.A. Office of Surgeon General, Department of the Army. Cloth. $3.25. Pp. 394, with 10 illustrations. Superintendent of Documents, Govern. Print. Off., Washington 25, D. C., 1955.

The history of the U. S. Army Medical Department in World War II is being prepared in two series of volumes: one, the administrative and operational series; the other, the professional and clinical series. This volume is the second of the group to be published concerning preventive medicine. In it are discussed the problems encountered and the measures taken by the medical department to safeguard the personal health of all Army personnel, including accounts of policies and practices. The excellent and interesting chapter on immunization was prepared by Col. Arthur P. Long, M. C. Concerning the practice of typhoid vaccination, which had been followed for many years previous to this war, Col. Long wrote that from 1934 until World War II the Army used a monovalent vaccine containing only Salmonella typhosa, but in 1940 a triple typhoid vaccine was adopted containing in each cubic centimeter 1,000 million S. typhosa and 250 million each of Salmonella paratyphi and Salmonella schottmülleri. In the entire U. S. Army from 1942 to 1945, only 505 cases of typhoid and 839 cases of paratyphoid were encountered. The rates for typhoid alone for the Army during this war were only about one-twentieth those in World War I, while the rate for paratyphoid was about three-fifths of that in World War I. The administration of tetanus toxoid was the first new generally applied immunization procedure adopted by the Army during World War II, and of all the immunization procedures

adopted, the tetanus immunization was probably the most successful. A total of only 12 cases occurred among Army personnel from Dec. 7, 1941, to Jan. 1, 1946, and of these, 6 occurred in nonimmunized persons.

Early in 1941 the War Department, on recommendation of the surgeon general, ordered vaccination against yellow fever for all military personnel stationed in tropical regions of the western hemisphere and the preembarkation vaccination of personnel ordered to these areas. In April, 1942, it became apparent that the outbreak of jaundice in the Army at that time was associated with yellow fever vaccination. More than 50,000 cases of jaundice were believed to have occurred in relation to yellow fever vaccination. Exhaustive investigations of the epidemic showed that the human serum used for the stabilization of the vaccine was the cause. In April, 1942, the surgeon general discontinued the use of this vaccine and soon afterward introduced a serum-free yellow fever vaccine, following which there were no more cases of jaundice traceable to yellow fever vaccination. As far as the effectiveness of this vaccine in American troops is concerned, little can be said; no cases of yellow fever occurred, but there was no appreciable exposure to the disease. The World War II Army immunization program was in the main successful. Smallpox, typhoid, paratyphoid, tetanus, and typhus, all real hazards, occurred with low frequencies. Col. Long writes, very modestly it seems, that "It is fair to attribute at least some of this relative freedom from these infectious diseases to the immunizations practiced." At the end of this chapter several appendixes give the administrative requirements for the different kinds of vaccinations. The other chapters in this volume are on nutrition and malnutrition and deficiency diseases, prepared by Dr. John B. Youmans; preventive psychiatry during World War II, by Dr. Marvin E. Perkins; accidental trauma, by Major Edgar L. Cook, M. C., and John E. Gordon; a chapter on clothing for Army personnel serving in the various climates, by Col. Tom F. Whayne, M. C.; a chapter on personal hygiene, by Col. Robert L. Callison, and the introductory chapter by Gertrude G. Johnson of the Historical Unit, Army Medical Service, on manpower selection and the preventative medicine program.

The Complete Medical Guide. By Benjamin F. Miller, M.D. Cloth. $4.95. Pp. 913, with illustrations by R. Paul Larkin. Simon and Schuster, Publishers, 630 Fifth Ave., New York 20, 1956.

There is no satisfying the great thirst of the layman for medical information and medical action. Witness the courses on hygiene and health in grammar schools; much of the energy of the Boy Scout movement directed at first aid; a great host of medical articles written for the laymen in popular lay journals; and a vast and growing collection of medical books by physicians addressed to the laymen. Any medical book that declares itself complete is sure to be out of date before it has gone to press. Though this is equally true of a book for laymen, it is not so important, for probably there will be no new medical information that the laymen should have to save his life. While this book doesn't have all the answers, it has a great many of them. It will be a great comfort to have in the house for consultation prior to taking action. Its five sections on the body, mind, home, doctor, and special problems give a wealth of medical detail. The words, although not always simple, are much clarified by an extensive medical glossary. The book gives a good balanced account, and it avoids sensationalism. Designed to temper rather than foment fears, it still may arouse some because many medical problems, not being simple, cannot be simplified. There is good sound instruction that should encourage our do-it-yourself enthusiasts to realize how often they are out beyond their depth and should call the family physician. In any book this big, one can find faults and errors if one looks closely, but there are very few in this book. For instance, on page 272 is the suggestion of treatment of the insanity of pellagra with vitamin B_2, which usually means riboflavin, whereas nicotinic acid or nicotinamide obviously is needed. On page 800 is a rather quaint notion that under certain circumstances natural foods might be substituted for multivitamin tablets. Having gone to the trouble of mentioning Dr. Lind and scurvy, Miller might have used his actual name, James, rather than Joseph. The book should serve excellently the purpose for which it is designed. It is more sensible than many home remedy books. Many specialists, laymen in fields outside their own, could profit by a careful reading of the book.

A Stereoscopic Atlas of Human Anatomy. Section III: The Upper Extremity. By David L. Bassett, M.D., Associate Professor of Anatomy, Stanford University, Calif. Reels 85-94; 95-104; 105-112; Index. [Together with] View-Master 3 dimension viewer model E and View-Master light attachment for model E viewer [and batteries]. Cloth, loose-leaf. $22.50. Various pagination, with color photographs by Wm. B. Gruber. Sawyer's Inc., Box 490, Portland, Ore.; Canadian Camera Specialties, Ltd., Vancouver, B. C., Canada; Camera Store, Hamilton, Bermuda, 1955.

The third section of this atlas continues on the same high level of quality as the preceding sections, which dealt with the central nervous system and the head and neck. It consists of a series of stereoscopic colored transparencies of dissections of the human body, including the bones. The photographs, seen with a stereoscopic viewer or projector, give a realistic view of the dissection, and their clarity surpasses that of any form of reproduction in two dimensions. Identification of the structures is made possible by the accompanying labeled line drawings made from tracings of the photographs. The photographs are taken from preparations progressing in normal sequence of dissection, which enables the observer to make a systematic study of the topography of the area. The dissections are excellent. The arteries and veins have been injected with red and blue latex, respectively, and the method of preservation has ensured good color contrasts.

The Blood-Brain Barrier, with Special Regard to the Use of Radioactive Isotopes. By Louis Bakay, M.D., F.A.C.S., Instructor in Surgery, Harvard Medical School, Boston. Publication no. 278, American Lecture Series, monograph in Bannerstone Division of American Lectures in Surgery. Edited by Michael E. DeBakey, M.D., Professor of Surgery and Chairman of Department of Surgery, Baylor University College of Medicine, Houston, Texas, and R. Glen Spurling, M.D., Clinical Professor of Surgery, University of Louisville, Louisville, Ky. Neurosurgery Division. Editor: Barnes Woodhall, M.D., Professor of Neurosurgery, Duke Hospital, Durham, N. C. Cloth. $5.50. Pp. 154, with 32 illustrations. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill.; Blackwell Scientific Publications, Ltd., 24-25 Broad St., Oxford, England; Ryerson Press, 299 Queen St., W., Toronto 2B, Canada, 1956.

A barrier exists that prevents some substances from reaching the brain from the blood. In this respect the brain is strikingly different from other tissues, which are far more penetrable. In this brief monograph Bakay discusses his investigations of this barrier. In the past, the blood-brain barrier has been described primarily in terms of its impenetrability by certain dyes, notably trypan blue, and other substances, such as bile pigments and sodium ferricyanide. Bakay has made his studies with radioactive isotopes, particularly P^{32}. What relation his results bear to the earlier studies is not entirely clear, as a great difference may exist between the effectiveness of the blood-brain barrier against dyes composed of large molecules and the phosphorus ion. Although these studies are by no means conclusive, they provide interesting information for speculation. Dr. Bakay's studies should receive serious consideration by all students of this problem.

Food Poisoning. By G. M. Dack, M.D., University of Chicago Committee on Publications in Biology and Medicine, Lester R. Dragstedt et al. Third edition. Cloth. $6. Pp. 251. University of Chicago Press, 58th St. and Ellis Ave., Chicago 37, 1956.

Progress in the entire field of food poisoning has made necessary another edition of this authoritative publication. More than half of the new edition is devoted to botulism, micrococcic (staphylococcic) food poisoning, and Salmonella organisms, with detailed discussions on history, epidemiology, symptoms, pathology, treatment, and prevention. Excellent chapters are presented on chemical poisons in food and on poisonous plants and animals, while the significance of Streptococcus faecalis and other bacteria in food poisoning receives due consideration. The book includes specific instructions for investigating outbreaks of food poisoning and closes with a chapter on infections to be differentiated from food poisoning. The various tables are excellent, and more than 500 references to published information are given. The book is a "must" for anyone interested in food poisoning.

QUERIES AND MINOR NOTES

LYING ON LEFT SIDE

TO THE EDITOR:—*What is the significance of the discomfort and dyspnea that comes from lying on one's left side when there is no known cardiac or pulmonary difficulty?*

J. W. Stobbe, M.D., Baltimore.

ANSWER.—Lying on the left side brings the heart closer to the chest wall and allows many normal persons to feel each cardiac contraction. This perception of the heart beat, which is not felt in the upright position, may cause anxiety, which, in turn, causes dyspnea. Such functional discomfort and dyspnea may be greatly aggravated by the extra pressure on the diaphragm resulting from a large air bubble in the stomach or a collection of gas in the splenic flexure. Such pressure against the diaphragm may also set up reflex spasm of coronary arteries, which, in turn, may produce mild myocardial ischemia, resulting in pain and dyspnea. Since the symptoms described occur only in the recumbent position, hiatus hernia also is to be considered. Often, localized skeletal disorders such as arthritis of the left sternocostal joints or dorsal spine may be responsible. These pains may be temporarily aggravated by assuming the recumbent position. On the other hand, careful roentgenographic, electrocardiographic, and pulmonary function studies may reveal pathological changes such as cardiac enlargement, coronary insufficiency, or aortic dilatation not previously recognized (Harrison, T. R.: Principles of Internal Medicine, ed. 2, New York, Blakiston Company, 1954, pp. 30-47 and pp. 84-92).

ENURESIS

TO THE EDITOR:—*Please give an opinion of the automatic alarm systems available for treatment of enuresis. Is there any psychological harm from their use?* *M.D., Florida.*

ANSWER.—Enuresis frequently is indicative of disturbance in the emotional development of the child. For some children, the use of the automatic alarm system could be harmful, in that the child is conditioned by mild punishment to control the symptom without any alleviation of the underlying disturbing psychological conflict.

RETINAL DETACHMENT

TO THE EDITOR:—*A patient had six separate attacks, or recurrences, of acute uveitis in nine months, manifested by shooting stars closing in from the side, pain in the bulb of the eye, and clouded vision, with cells found in the anterior chamber. Six weeks after the last attack, a chronic, healed chorioretinitis was found and a flat detachment of the retina was noted. There was no chorioretinitis noted after the first attack. Can the above episodes be the etiological factor in causing the retinal detachment? The person is moderately myopic.*

M.D., Texas.

ANSWER.—Several specific types of uveitis are associated with retinal detachment. This detachment usually subsides as the inflammation clears. There is no hole formation, and treatment must be directed toward the inflammation causing it. The lesions of chorioretinitis are frequent causes of retinal detachment, which occurs through actual hole formation in the retina, by the formation of folds due to fibrous tissue contracture, and as an incident in proliferative retinopathy. The detachment described could well have arisen from the inflammation.

The answers here published have been prepared by competent authorities. They do not, however, represent the opinions of any medical or other organization unless specifically so stated in the reply. Anonymous communications and queries on postal cards cannot be answered. Every letter must contain the writer's name and address, but these will be omitted on request.

CANCER IN BREAST OF TWIN

TO THE EDITOR:—*A 36-year-old identical twin has had a radical mastectomy. What chance is there of her twin sister developing the same disease? The patient had two separate primary cancers, each being 1 cm. in diameter in the same quadrant of the same breast. There were no detectable metastases. Does this multicentral origin, as compared with a unicentral origin, increase the likelihood of the other breast developing another primary cancer? Does it make for a graver prognosis? Is sterilization recommended, and, if so, is radiation or oophorectomy suggested?* *C. J. Heifetz, M.D., St. Louis.*

ANSWER.—There would seem to be no greater probability than usual that an identical twin will develop cancer if her sister has it. The apparent multicentral origin of the described tumors does not increase the likelihood of primary cancer in the other breast and does not make for a graver prognosis. However, if one of the tumors is a metastasis rather than being a second primary, then, the likelihood of cancer in the other breast is definitely increased and the prognosis is graver. There is a difference of opinion regarding sterilization in premenopausal women with cancer of the breast. Most physicians feel that it should not be done until there is evidence of persistent or recurrent disease. Surgical castration is preferred.

MULTIPLE MYELOMA

TO THE EDITOR:—*What is the treatment of multiple myeloma? What can be done for severe bone pain?*

M.D., New York.

ANSWER.—Urethan, cortisone, corticotropin, and local irradiation are still the most reliable agents in the treatment of plasma cell myeloma. When there are generalized skeletal and metabolic disturbances, treatment is preferably begun with urethan. Two to five grams is given daily until a total of 250 to 300 gm. has been administered. Nausea and vomiting may necessitate temporary interruption of therapy. Leukopenia frequently occurs, but only rarely is it of serious degree. If the response to urethan is not satisfactory, cortisone or corticotropin therapy may be given a trial. Sometimes combined therapy with urethan and cortisone or corticotropin gives good results. Relief from local pain is often afforded by irradiation. As a last resort, stilbamidine or 2-hydroxystilbamidine given intravenously may be tried. These drugs will give relief from pain in about 50% of patients, but serious side-effects such as delayed dissociated trigeminal anesthesia and increased damage to a myelomatous kidney are common. Benefit from any of these procedures is usually of short duration.

OCCLUSION OF INFERIOR VENA CAVA

TO THE EDITOR:—*I recently observed a query in* THE JOURNAL, *Nov. 19, 1955, regarding the effects in the human of sudden occlusion of the vena cava between the renal and the hepatic veins. At Temple University Hospital we recently had a patient in whom the vena cava from its bifurcation to the level of the hepatic veins was resected at the time of excision of the right kidney. After this procedure, the venous drainage of the left kidney was reestablished by insertion of a freeze-dried arterial graft between the left renal vein and the proximal vena cava just below the hepatic vein. The patient was about 30 years old and survived the procedure well after a rather stormy course for one week. He has now been discharged and shows no evidence of ascites, and there is no edema of the lower extremities.*

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